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Practical Pharmacy Edition

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Editorial

WAR PROBLEMS HIGHLIGHT DENVER MEETING

REPRESENTATIVES of various governmental agencies including the War Production Board, the Office of Price Administration, the Board of Economic Warfare, the Army, the Navy, and of Congress are expected to attend the 90th Annual Meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION in Denver, Colorado, August 16–21, to counsel and advise the profession of pharmacy in applying its personnel and facilities most effectively in the prosecution of the war effort. In most, if not all, cases the representatives of the government agencies will be men with pharmaceutical training and experience who will be able to explain not only the objectives of their respective units but how pharmacists individually and collectively can adjust themselves to the emergency restrictions and aid their government. The effectiveness of the work of the war agencies depends upon the understanding support of those who are bound by price ceilings, conservation orders and other necessary emergency restrictions, and the Denver Meeting will be the first opportunity that WPB, OPA, and other agencies have had to discuss their work and their plans with the pharmacists of the nation.

One of the most important sessions of the meeting will be the combined meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION, the American Association of Colleges of Pharmacy and the National Association of Boards of Pharmacy on Monday evening, August 17th. At this meeting Dean H. Evert Kendig, Chairman of the Committee on the Status of Pharmacists in the Government Services, will present his report. Following Dr. Kendig's report there will be an open discussion of the pharmacist under Selective Service, in the Army and in the Navy; Congressman Durham's Pharmacy Corps Bill which was introduced in Congress on July 22nd; federal loans to pharmacy students; and the related problems of personnel shortages, acceleration of college courses, and the maintenance of our present standards of pharmaceutical practice.

The affairs of pharmacy need careful guidance during this emergency period and it is of the utmost importance that every individual in the field realize the significance of the past year's developments so that he can govern his actions intelligently. The problem of providing the number of pharmacists required by the armed forces without leaving any community without adequate pharmaceutical services for the protection of civilian health requires careful study. The fact that approximately one-third of the nation's physicians are expected to be in uniform by the end of this year will place an added burden on civilian pharmacists and the profession should give consideration to ways and means in which pharmacists can shoulder this task. The whole future of pharmacy may well depend upon the decisions which are made during the emergency. If our educational standards should be broken down, our requirements for licensure relaxed, or if the shortage of men and women in practice should force the public to develop other means of obtaining drugs and health supplies, pharmacy as a profession would suffer immeasurably and possibly irreparably. The American people can depend upon pharmacy to contribute its full measure of support to the war effort and to accept will-

ingly any sacrifice which is essential to victory, but the profession will do everything within its power to see that pharmacy's part in the emergency is guided wisely—for the benefit not of the profession but of the public.

The present emergency will not end with the military victory for the problems of peace will challenge our entire way of living and every American institution will have to justify its existence in the light of a changed political, economic and social world. How the public will decide it shall receive and pay for medical, dental and pharmaceutical services necessary to health is bound to be an important decision during the reconstruction period. The position of pharmacy at that time may very conceivably be determined by how the profession has weathered the war and right now is when we are making the decisions which will guide us through that period.

In considering these probable problems of the period which will follow the war we must not be complacent in the belief that because pharmacy has always been a profession it will always be such. The United States Court of Appeals, in upholding the A.M.A. conviction on charges of conspiracy in restraint of trade recently, said "Professions exist because the people believe they will be better served by licensing especially prepared experts to minister to their needs. The licensed monopolies which professions enjoy constitute, in themselves, severe restraints upon competition, but they are restraints which depend upon capacity and training, not special privilege.

"The better educated laity of today questions the adequacy of present-day medicine," said the Court. "Their challenge finds support from a substantial portion of the medical profession itself. The people give the privilege of professional monopoly and the people may take it away."

It might be said, in passing, that many of "the better educated laity of today" are inclined to regard pharmacy as practiced in this country as a retail business rather than a profession. For example, ponder the classification of prescriptions by OPA as commodities sold in drug stores and the insistence of this governmental agency that they come under the General Maximum Price Order which exempts professional services.

The time is upon us when we must get our thinking straight, contemplate our future through the pressure of the war and the critical years which will follow, and shape, as well as we can, the destiny of the profession.

The Denver Convention will be a war meeting—but it will be even more than that. Those who attend and take part in the discussions will help formulate policies and plans of fundamental importance which may be expected to exert a profound influence on the conditions under which we, and those who follow us in this profession, will live and practice.

COME TO DENVER
AUGUST 16–21
FOR THE
90TH ANNUAL MEETING
OF
THE AMERICAN PHARMACEUTICAL ASSOCIATION
AND AFFILIATED ORGANIZATIONS

H. R. 7432
IN THE HOUSE OF REPRESENTATIVES
JULY 23, 1942

A BILL

To amend certain provisions of the National Defense Act of June 3, 1916, as amended, relating to the Medical Department of the Regular Army. (Underlined portions indicate amendments.)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That (*a*) the first sentence of the first paragraph of section 10 of the National Defense Act of June 3, 1916, as amended, is amended by striking out "the Medical Administrative Corps" and inserting in lieu thereof "the Pharmacy Corps."

(*b*) The second sentence of the first paragraph of section 10 of such Act, as amended, is amended to read as follows: "The number of officers of the Medical Corps shall be 1,424, and of the Pharmacy Corps, 72."

(*c*) The second sentence of the second paragraph of section 10 of such Act, as amended, is amended to read as follows: "An officer of the Pharmacy Corps shall be promoted to the grade of first lieutenant after three years' service, to the grade of Captain after six years' service, to the grade of major after twelve years' service, to the grade of lieutenant colonel after twenty years' service, and to the grade of colonel after twenty-six years' service."

(*d*) The last sentence of the third paragraph of section 10 of such Act, as amended, is amended to read as follows: "For purposes of future promotion, any person so appointed in the Medical or Dental Corps shall be considered as having had, on the date of appointment, service equal to that of the junior officer of his grade and corps now in the Regular Army; and in the Veterinary or Pharmacy Corps, sufficient service to bring him to his grade under the rules established in this section."

Sec. 2. The last two sentences of section 24 (c) of the National Defense Act of June 3, 1916, as amended, are amended to read as follows: "Existing laws providing for the examination of officers for promotion are hereby repealed, except those relating to physical examination, which shall continue to be required for promotion to all grades below that of brigadier general, and except also those governing the examination of officers of the Medical, Dental, Pharmacy, and Veterinary Corps. Officers of said four Corps shall be examined in accordance with laws governing examination of officers of the Medical Corps."

Sec. 3. The fourth sentence of section 24 (e) of the National Defense Act of June 3, 1916, as amended, is amended to read as follows: "Appointments in the Pharmacy Corps shall be made in the grade of second lieutenant from pharmacists between ages of 21 and 32 years who are graduates of recognized schools or colleges of pharmacy requiring four years of instruction for graduation, under such regulations and after such examinations as the Secretary of War shall prescribe."

Sec. 4. The first and second provisos of section 47 (c) of the National Defense Act of June 3, 1916, as amended, are amended to read as follows: "*Provided*, that any medical, dental, pharmacy, or veterinary student may be admitted to a Medical, Dental, Pharmacy, or Veterinary Corps unit of the Reserve Officers' Training Corps for a course of training at the rate of ninety hours of instruction per annum for the four collegiate years, and if at the end of two years of such training he has been selected by the professor of military science and tactics and the head of the institution for advanced training, and has agreed in writing to continue in the Reserve Officers' Training Corps for the remainder of his course at the Institution, and has agreed in writing to pursue the course in camp training prescribed by the Secretary of War, he may be furnished, at the expense of the United States, with commutation of subsistence at such rate not exceeding the cost of the garrison ration prescribed for the Army, as may be fixed by the Secretary of War, during the remainder of his service in the Reserve Officers' Training Corps, not exceeding two years: *Provided further*, that any Reserve officer who is also a medical, dental, pharmacy, or veterinary student may be admitted to such Medical, Dental, Pharmacy, Veterinary Corps unit for such training, under such rules and regulations as the Secretary of War may prescribe."

BILL INTRODUCED TO ESTABLISH PHARMACY CORPS IN THE ARMY

CONGRESSMAN DURHAM, OF NORTH CAROLINA, ASKS COMPARABLE RECOGNITION WITH PHYSICIANS, DENTISTS AND VETERINARIANS FOR PHARMACISTS IN SERVICE

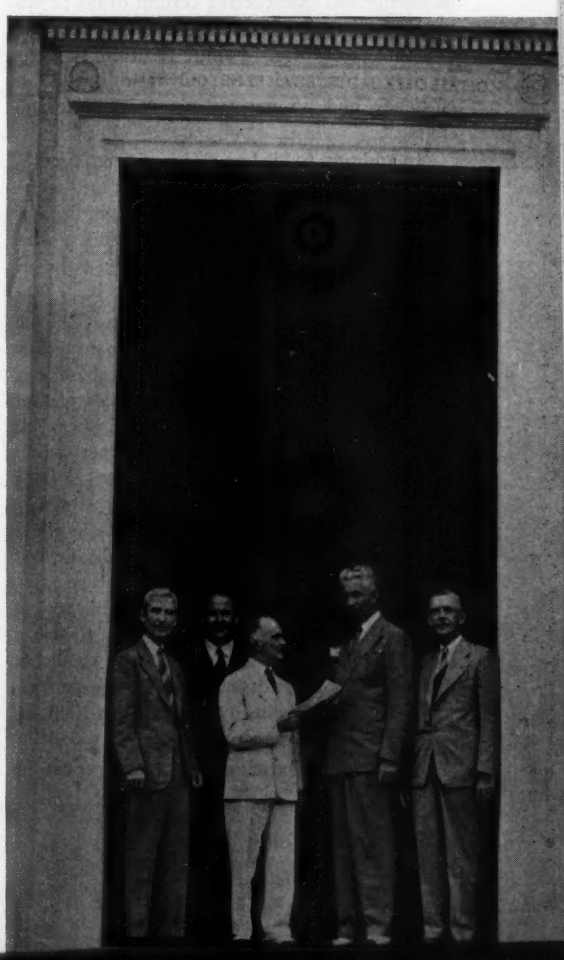
A VIGOROUS demand that the health of the American soldier be given the same protection that the American civilian enjoys in respect to drugs and medicines was made in Congress July 23rd by Representative Carl T. Durham, of North Carolina, in introducing a bill to provide for the establishment of a Pharmacy Corps in the U. S. Army. Mr. Durham is a member of the House Military Affairs Committee.

In a statement explaining his bill, Congressman Durham, who is himself a pharmacist, said, "Pharmacy is a civilian profession which involves duties which have their counterpart in the Army. It is a distinct calling in civil life of comparable status with medicine and dentistry and one which only pharmacists are qualified to practice.

"The American public requires that those who compound and dispense drugs and medicines meet high requirements of education, training, and experience before they are entrusted with the responsibility of handling strychnine, morphine, sulfanilamide, and other potent drugs and poisons. The civilian pharmacist must be a graduate of a four-year course in pharmacy in an accredited college of pharmacy, must serve a year or more of interneship, and then must pass stringent state examinations in order to be licensed.

"Corresponding protection is not afforded the soldier. The Army permits drugs and medicines to be compounded by enlisted men; in some cases the man is given a '90-day instruction' but not all of the men who are to-day performing pharmaceutical tasks in Army hospitals and installations have had even this much training. The Army seems disposed to regard pharmacy as work of a subsidiary nature which the physician can undertake as a matter of course, or which can be relegated to persons with limited or undefined training. In doing so, it fails to give the soldier the protection to which he is entitled.

"The modern treatment of disease requires the use of such highly specialized, complex compounds as sulfanilamide, sulfathiazole, sulfadiazine, sulfaguanidine, and serums, vaccines and antitoxins. These very effective new drugs have greatly



Dr. H. Evert Kendig, Chairman of the Committee on the Status of Pharmacists in the Government Service of the AMERICAN PHARMACEUTICAL ASSOCIATION, *the National Association of Retail Druggists, the American Association of Colleges of Pharmacy, and the National Association of Boards of Pharmacy, hands the original copy of the Pharmacy Corps Bill to Congressman Carl T. Durham, of North Carolina, who introduced it in the House of Representatives. Present at this ceremony, which took place on the steps of the* AMERICAN INSTITUTE OF PHARMACY, *Washington headquarter of the* A. PH. A., *were (left to right) Dr. E. F. Kelly, Secretary of the* A. PH. A., *Rowland Jones, Washington Representatives of the N. A. R. D., and Congressman Harve Tibbott, of Pennsylvania, who is also a pharmacist.*

changed the procedure of the Army doctor; no longer does he confine his prescribing to the drugs found in the simple lists of a few years ago. The safety of our men in uniform demands that those who handle these drugs and similar medicines be highly trained, competent individuals who are familiar with the character of the potent substances they supply.

"At the present time in the Army, various phases of the purchase, shipment, storage, compounding and dispensing of drugs and medicines are assigned to the Sanitary Corps, the Medical Corps and the Medical Administrative Corps with consequent division of authority and responsibility, overlapping of duties, and unnecessary red tape. All of these functions should be coördinated in a Pharmacy Corps of equal standing and authority as the Medical, Dental and Veterinary Corps. Pharmacists by their education and training know how to purchase drugs and medicines wisely and economically. They are competent to standardize them. They know the special precautions which must be taken in storing and transporting certain drugs to prevent deterioration through excessive heat, cold, moisture or dryness. Failure to utilize fully the services of pharmacists can only result in a lack of efficiency and an uneconomic use of medical supplies.

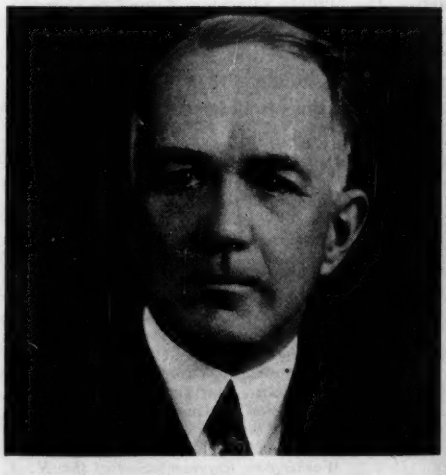
"In addition to his knowledge of the sources of supply of drugs, their testing, storage, transportation, compounding, dispensing and use, the pharmacist's training fits him to render other special duties related to the furnishing of health services, should an emergency demand it.

"Enactment of the Pharmacy Corps Bill will not only give the American soldier the protection of a well-coördinated pharmaceutical service, make available large, unused resources of skill and knowledge for fruitful application, but would release many physicians who are now performing tasks which could be handled as well or better by pharmacists. The Army is short of physicians and yet many doctors are performing tasks which are more pharmaceutical than medical. Several medical journals have recently warned that many physicians in the Army are liable to lose their skill and technique through lack of their use. I believe that physicians in the Army should be relieved of all the duties which they now perform which could be assumed by men with pharmaceutical training."

Congressman Durham's Bill is supported by the AMERICAN PHARMACEUTICAL ASSOCIATION, the National Association of Retail Druggists, the American Association of Colleges of Pharmacy, the National Association of Boards of Pharmacy, and the National Drug Trade Conference, as well as state and local pharmaceutical associations.

The Bill introduced by Congressman Durham would amend the National Defense Act of June 3, 1916, as amended, by changing the name of the Medical Administrative Corps to the Pharmacy Corps, raising the number of personnel in the Corps from 16 to 72, and changing the promotion schedule to permit increase in rank to first lieutenant after 3 years' service; to captain after 6 years' service; to major after 12 years' service; to lieutenant colonel after 20 years' service; and to colonel after 26 years' service. Applicable sections of the Act would be amended to include the Pharmacy Corps with the Medical, Dental and Veterinary Corps to give pharmacists comparable rights and privileges. Appointments in the Corps would be in the grade of second lieutenant.

It must be borne in mind that the Pharmacy Corps Bill relates to the Regular Army. Its provisions may or may not be applied to the organization of the Army of the United States depending upon the will of the appropriate officials. Should the need for pharmacists in the armed forces become extremely acute, regulations could be issued commissioning pharmacists in the Army of the United States directly from civil life without requiring the previous military service which is now required.



Dr. H. Evert Kendig, who will discuss the Pharmacy Corps Bill at the Denver Meeting of the A. PH. A.

Syrup Substitutes

SUGAR SHORTAGE CENTERS ATTENTION ON ARTIFICIAL SYRUPS, SUSPENSIONS OF TRAGACANTH OR IRISH MOSS SWEETENED WITH SOLUBLE SACCHARIN FOUND MOST SATISFACTORY

by C. LEE HUYCK

OF THE RESEARCH LABORATORIES OF THE WILLIAM S. MERRELL COMPANY

BECAUSE of the present restrictions on the use of sugar in pharmaceuticals and the possibility of greater restrictions in the future, the question of syrup substitution is an important one. It is hoped that this article may be of some value to workers confronted with this problem now and in the future.

In 1864 honey was suggested as a sugar substitute in syrup of ferrous iodide[1] not because of the lack of sugar but because it made a more stable syrup. T. B. Groves[2] added gums and honey to syrup of chloroform in order to increase its stability and viscosity. Guichard[3] recommended glycerin as a substitute for sugar when a syrup was directed to be prepared from a drug extract. Molasses was suggested by F. Goldby[4] as a syrup substitute during World War I for syrups of senna, rhubarb and poppy capsules. In suggesting saccharin as a sugar substitute, H. Helch[5] found the amounts required to equal the sweetness of sugar syrups with the specific gravity of 1.30 and 1.33. C. P. Wimmer[6] suggested two "War Emergency Formulas" for syrups to be used as substitutes for the official syrup of the United States Pharmacopœia. One contained glucose, saccharin and water, while the other contained crystal-white Karo, saccharin and water. E. O. Von Lippman[7] pointed out that honey and molasses were used as syrup substitutes in the twelfth century. In view of the 20 per cent restriction on cane sugar in the last war, S. T. Hensel[8] suggested a formula for a saccharin solution comparable to syrup in sweetness. The relative sweetening power of sugar substitutes was reported by the United States Department of Agriculture[9] to be as follows: sugar 100, honey (44° B.) 75, corn sugar 45, maltose syrup (42° B.) 30, corn syrup (45° B.) 20. W. A. Uglow[10] found that Dulcin was dangerous for constant use as a sweetening agent. A concentrated sugar syrup containing cane sugar and invert sugar was recommended to the drug industry[11] as a substitute for the official syrup because of its high stability against molds and yeasts. Sionon (*d*-sorbitol) was recommended as a sugar substitute by H. Reinwein[12] but he pointed out that doses exceeding 70 Gm. cause diarrhea.

Recently, the British Pharmaceutical Codex Committee[13] have endeavored to find a suitable syrup substitute. A satisfactory substitute for all syrups was not found but the formula used in the last war has received the most attention. It has the following composition:

Tragacanth powder	2.5 Gm.
Alcohol, a sufficient quantity	
Chloroform	0.25 Gm.
Soluble Saccharin	0.25 Gm.
Distilled Water, *q. s.*	100 cc.

Several other gums were investigated because of the fluctuation in the availability of tragacanth and because tragacanth was not always found to be the most suitable. If no more than a 25 per cent reduction of sugar was wanted, the following formula was satisfactory:

Mucilage of acacia	25 cc.
Syrup, *q. s.*	100 cc.

The following formulas were stable for four months:

I

Gum tragacanth	2.0 Gm.
Glycerin, a sufficient quantity	
Nipagin M	0.1 Gm.
Soluble Saccharin	0.1 Gm.
Water, *q. s.*	100.0 cc.

II

Karaya Gum	1.0 Gm.
Glycerin, a sufficient quantity	
Nipagin M	0.1 Gm.
Soluble Saccharin	0.1 Gm.
Water, *q. s.*	100.0 cc.

In these formulas, glycerin was used merely to form a cream and to increase miscibility. Another possibility is syrup of althea of the British Pharmacopœia Codex which contains 4 per cent of althea, 90 per cent of sucrose, 0.25 per cent of chloroform, and 56 per cent of distilled water. From syrup of althea, a good syrup substitute can be made by increasing the althea to 6 per cent and by replacing the sugar with 0.1 per cent soluble saccharin. In making syrup substitutes of the above types, the mucilages were brought to the boiling point and were allowed to digest for a half an hour before straining through flannel. None of the above syrup substitutes were found to be satisfactory for Parrish's or Easton's syrups.

C. H. Sykes[14] stated that the following syrup substitute has been used by the London Hospital since April 1941:

P.M.B. #444 (May & Baker, Ltd.)	44 gr.
Chloroform	96 min.
Soluble Saccharin	56 gr.
Water, *q. s.*	1 gal.

The disadvantages of this formula were stated to be as follows: (1) The P.M.B. #444 (methyl cellulose) separated out in the form of a flocculent precipitate in the presence of a high concentration of alcohol or electrolyte; (2) syrups made by this formula were difficult to strain since the methyl cellulose blocked the openings of the straining cloth.

EXPERIMENTAL

A series of artificial syrups containing a water-soluble gum as thickening agent and sweetened with soluble saccharin were prepared about one year ago. They were flavored with artificial fruit essences and buffered to a *p*H of 4.8 with 1.3 per cent of citric acid and 4.4 per cent of sodium citrate. The high concentration of buffer salts was used in order to observe the effect of the addition of an electrolyte on the gum solution. As a preservative a combination of 0.02 per cent of Butoben and 0.1 per cent of benzoic acid was used. The thickening agents with amounts used were as follows:

8 per cent citrus pectin #100,
3.1 per cent Tylose (methyl cellulose),
2 per cent extra high viscosity Methocel (methyl cellulose),
2 per cent Gelloid (irish moss),
18 per cent acacia,
1½ per cent tragacanth,
1 per cent locust bean gum,
1.5 per cent Iscoalgin (purified alginate),
3 per cent Orbalgin (purified alginate),
3 per cent apple pectin #210,
3 per cent Kelgin (sodium alginate),
8 per cent apple pectin #100,
3 per cent karaya gum,
A combination of 50 per cent glycerin and 20 per cent sorbitol.

Syrups containing Tylose, Methocel and acacia were unsatisfactory directly after preparation. The syrups containing the Orbalgin, apple pectin #210, citrus pectin #100, apple pectin #100, karaya gum, Iscoalgin and the combination of

20 per cent sorbitol and 50 per cent glycerin contained sediments after one month's storage at room temperature. The syrup containing Gelloid showed a few coarse particles in suspension after one year at room temperature, but it was considered satisfactory. The syrups containing Kelgin, tragacanth and the locust bean gum were of satisfactory stability after storing for one year at room temperature.

Since the syrup containing the Kelgin was quite viscous, 2 per cent would probably be more satisfactory than the 3 per cent used in the above experiment. It is interesting to note that a syrup containing 3 per cent apple pectin #210 adjusted to a *p*H of 5.2 jellied after six months while a similar syrup adjusted to a *p*H of 3.9 had only a small amount of sediment after thirteen months' storage at room temperature.

SUMMARY

1. Artificial syrups of satisfactory stability prepared with sodium alginate, irish moss, tragacanth and locust bean gum as thickening agents and soluble saccharin as sweetening agent have been prepared.

2. Syrup substitutes containing two grades of methyl cellulose namely Tylose and Methocel were found to be unsatisfactory. These results are in agreement with the results of C. H. Sykes.[14]

3. Because of the uncertainty of the supply of tragacanth and locust bean gum during the present world conflict, domestic sodium alginate and irish moss will probably receive more attention in the future.

REFERENCES

[1] Anon., *Bull. de Therap.;* through PROC. A. PH. A., 12 (1864), 82.
[2] Groves, T. B., PROC. A. PH. A., 13 (1865), 109.
[3] Guichard, *Arch. Pharm.* (January 1874), 81; through PROC. A. PH. A., 22 (1874), 74.
[4] Goldby, F., *Pharm. J.*, 98 (1917), 85.
[5] Heich, H., *Pharm. Post; Schweiz. Apoth. Ztg.*, 55 (1917), 239; through *Chem. Abstr.*, 11 (1917), 2532.
[6] Wimmer, C. P., JOUR. A. PH. A., 7 (1918), 39.
[7] Von Lippman, E. O., *Apoth. Ztg.*, 39 (1918), 19; through YEAR BOOK A. PH. A., 7 (1918), 483.
[8] Hensel, S. T., JOUR. A. PH. A., 7 (1918), 607.
[9] Anon, *Am. Druggist*, 68 (September 1920), 25; through YEAR BOOK A. PH. A., 9 (1920), 577.
[10] Uglow, W. A., *Schweiz. Apoth. Ztg.*, 63 (1925), 282; through YEAR BOOK A. PH. A., 14 (1925), 194.
[11] Anon, *Drug Markets* (July 1928), 28; through YEAR BOOK A. PH. A., 16–17 (1928), 669.
[12] Reinwein, H., *Deut. med. Wochschr.*, 55 (1929), 397; through *Chem. Abstr.*, 23 (1929), 3742.
[13] Anon., *Chemist and Druggist*, 133 (1940), 318.
[14] Sykes, C. H., *Pharm. J.*, 148 (1942), 41.

A NEW WASHABLE OINTMENT BASE

by EMERSON C. BEELER

MEMBER OF THE LABORATORY STAFF, AMERICAN PHARMACEUTICAL ASSOCIATION

A NEW BASE WHICH CAN BE EASILY PREPARED BY ANY PHARMACIST, IS APPARENTLY COMPATIBLE WITH DRUGS USED IN TREATING SKIN CONDITIONS, AND CAN BE MADE UP AS A STOCK BASE FOR EXTEMPORANEOUS USE

AMONG the more important developments in dermatology is the current trend away from greasy ointment bases and toward the so-called "washable" ointment bases which are oil-in-water emulsions of ointment consistency. Dermatologists believe that these new bases permit a better penetration of medication and allow the heat of an inflamed area to escape. Certainly they are more pleasant to use.

Although countless formulas for such bases have appeared in the literature, none so far has been fully satisfactory. Various authors[1, 2, 3] have described an ideal ointment base as one which is:

1. Stable
2. Neutral in reaction
3. Non-greasy
4. Not degreasing in action
5. Non-irritating

6. Non-dehydrating
7. Non-hygroscopic
8. Removable by washing with water
9. Compatible with all medication
10. Free from objectionable odor
11. Non-staining
12. Efficient on dry, oily or moist skins
13. Capable of serving as a medium for chemicals soluble in either water or fats
14. Capable of stock preparation for extemporaneous use
15. Composed of readily available ingredients of known chemical composition
16. Capable of holding at least 50 per cent of water
17. Easily compounded by the pharmacist

A number of the washable ointment bases which have been suggested in the literature are under study in the Laboratories of the AMERICAN PHARMACEUTICAL ASSOCIATION as has been described in THIS JOURNAL,[4] but all have been found to fall far short of the ideal. Some bases are incompatible with many of the medicaments commonly prescribed by dermatologists. Others are apparently reversed by certain medicaments and become non-washable. Still others are unnecessarily involved or call for the use of substances which are very difficult to obtain.

Modifications of the suggested bases have been studied and an attempt made to develop a new base which would more nearly approach the ideal. The following base is the product of these studies and, although complete evidence as to its incompatibilities is not as yet available, it appears to be more satisfactory than any other base thus far suggested in the literature. It is apparently compatible with every medicinal substance with which it has been tested and, until a better formula is developed, is suggested for use by the pharmacist.

Cetyl alcohol*	15.0
White wax	1.0
Propylene glycol†	10.0
Sodium lauryl sulfate*	2.0
Water	72.0

* Available from E. I. Du Pont de Nemours, Inc., Wilmington, Delaware. The sodium lauryl sulfate for cosmetic use is sold under the trade name Duponol C.

† Available from Carbide and Carbon Chemical Corp., 30 East 42nd St., New York City.

Melt the cetyl alcohol and white wax in the propylene glycol on a water bath and heat to about 65° C. Dissolve the sodium lauryl sulfate in the water and heat on the water bath to about 65° C. Slowly add the oil phase to the well-stirred water phase and continue stirring on the water bath for about ten minutes. Remove from bath and continue stirring to the point of congealing.

CETYL ALCOHOL

Cetyl alcohol has the chemical formula $CH_3(CH_2)_{14}CH_2OH$ and a molecular weight of 242.4. The practical form contains homologues and is manufactured by E. I. Du Pont de Nemours, Inc., of Wilmington, Delaware, and by Givandan-Delewana, Inc., 330 West 42nd St., New York City. It is a white, wax-like solid melting at about 49° C., insoluble in water, soluble in mineral and vegetable oils, fats, alcohols, ether, carbon disulfide, glycol and diglycol ethers. It is stable in the presence of acids, alkalies, light and air. It is used as a hardening agent, emulsion stabilizer and emollient in creams and may be used as additive in 1 to 5 per cent concentration or from 5 to 20 per cent as the principal wax base.

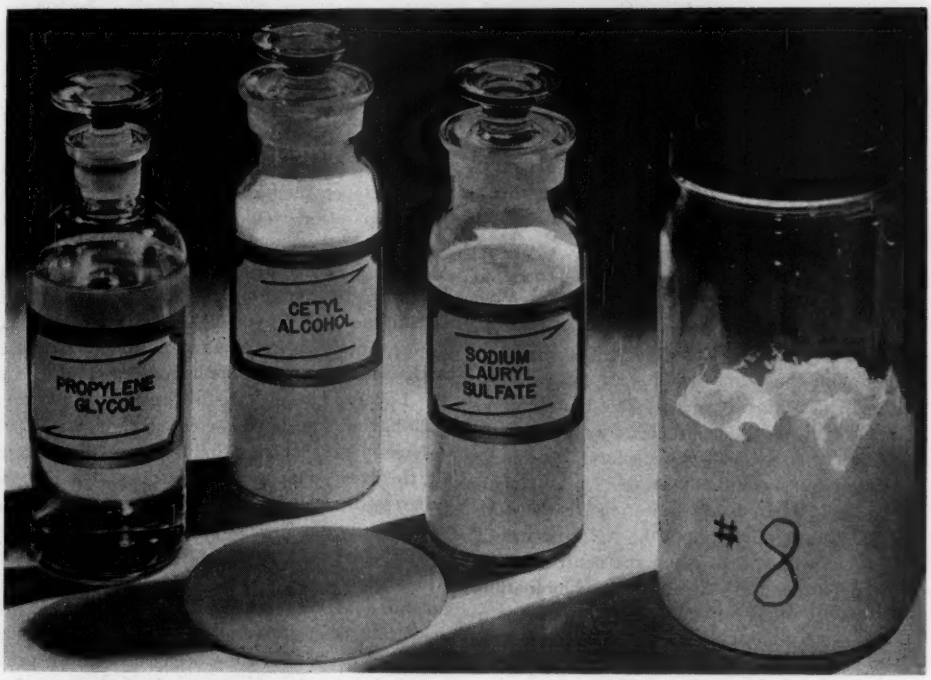
Cetyl alcohol is greaseless, a good emollient, and renders the skin velvety. Its penetrating power in combination with a wetting agent such as sodium lauryl sulfate causes medicaments to be readily transferred through the skin and in some cases they may be used in lower concentrations than in older types of bases such as petrolatum and lanolin.

Creams containing cetyl alcohol must be stirred thoroughly. According to a report in *Drug and Cosmetic Review*,[5] it does not become effectively hydrated and serve as a stabilizer for the emulsion until it is in a finely divided form. It undergoes no bactericidal decomposition, is non-toxic and soothes irritated skin.

SODIUM LAURYL SULFATE

Wetting agents derived from numerous alkyl derivatives of aryl sulfonates, fatty alcohol sulfates, sulfated fatty alcohol esters of higher fatty alcohols and dibasic acids, esters of sulfosuccinates and many others are of value in preparing more efficient and finer ointment bases. Their effectiveness is based on the power of reducing surface tension and lowering interfacial tension between solid and solvent, thus permitting rapid penetration and dispersion of the solid. By this property they are useful as detergents and penetrants and some of these agents are also efficient emulsifiers.

Sodium lauryl sulfate is one of these agents having all three properties of penetration, deter-



gent and emulsifier combined. The technical product is made by Du Pont under a lead tolerance of 3 parts per million and an arsenic tolerance of 2 parts per million to conform to the present Federal Food, Drug and Cosmetic Act, and is marketed under the trade name of Duponol C. It is a white, flaky solid, soluble in water and is effective in solutions of alkali and metal salts and in low acid concentrations. It hydrolyzes very slowly in creams on the acid side; cosmetic creams at *p*H 2.2 remained stable for a minimum of six months' shelf testing.

PROPYLENE GLYCOL

Ease of spread and softness are essential to a finer ointment base. Creams made with cetyl alcohol which do not contain a softening agent are not satisfactory. To promote these features the addition of propylene glycol was found to produce an elegant preparation.

Propylene glycol is chemically $CH_3CHOH\text{-}CH_2OH$ and has a molecular weight of 76.1. It is a colorless, practically odorless liquid and is completely miscible with water and many organic solvents. It is a solvent for a variety of dyes, resins, essential oils and other organic substances, being claimed a better solvent than glycerin. It is equal to ethanol and better than glycerin for inhibiting mould growth and fermentation. The specific gravity of this substance is 1.0381 at 20°/20° C. and the boiling point is 188.2° C.; average density is 8.64 pounds per gallon at 20° C. In hand lotions and creams it is used as a softener. Pharmacy and cosmetics may look upon it as a substitute for glycerin and solvent for many therapeutic agents, particularly vitamin D and the "Sulfa" drugs. It is available from Carbide and Carbon Chemicals Corp., 30 East 42nd St., New York City.

This ointment base has been shown to be of the oil-in-water type from the fact that it is easily washable from the skin with water and from microscopic observations which showed the oil phase, stained with the oil-soluble dye Sudan IV, to be dispersed in fine, even-sized particles through the water phase.

*p*H VALUE

An important factor in determining the desirability of an ointment base is its *p*H value. Exact *p*H value of an ointment or ointment base is difficult to determine and its value has not been

established as far as skin *p*H is concerned. Although the addition of certain therapeutic agents alter the *p*H of the ointment base, the stability and *p*H of the ointment are greatly influenced by the *p*H of the ointment base. So far as can be determined with the aid of the potentiometer and by the application of proper *p*H indicators, the *p*H of the ointment base reported here is within the range of 7 to 9 and is decidedly on the alkaline side.

Conclusions drawn as to the range of *p*H of this ointment base were based on a series of separate determinations. The base was divided into its water phase and its oil phase. It is impractical to determine the *p*H of the oil phase but with the aid of *p*H indicators it was possible to determine what effect each of the ingredients would have on the water phase. The water phase, consisting of sodium lauryl sulfate and water, was found to have a *p*H of 9.2 by potentiometric measurements and 100 Gm. required about 0.8 cc. of twentieth normal sulfuric acid to reach the neutral *p*H 7, using potentiometric titration in combination with the *p*H indicator phenol red, which has a *p*H range of 6.8 to 8.4. The *p*H of this solution at 7.0 was unaffected by the addition of 13.5 Gm. of propylene glycol which indicates that this ingredient has no effect on *p*H of the water phase; the amount of propylene glycol added here is the amount in the base when 100 Gm. of water phase are present. A 135.1 Gm. quantity of the base (100 Gm. of water phase plus 35.1 Gm. of oil phase) was prepared as specified and the phenol red *p*H indicator added to the water phase before adding the oil phase. While hot the base was titrated with twentieth normal sulfuric acid and found to require about 1 cc. of the acid which is not much different from the value of 0.8 cc. required for the water phase alone. In view of these titer values it is probable that the *p*H of the water phase has been unchanged by the presence of cetyl alcohol and beeswax and that the *p*H of the ointment base is closely represented by the *p*H of the water phase which was determined potentiometrically to be around 9.2.

Temperature changes between 0° and 50° C. do not affect the consistency or promote separation of this ointment base. It has been alternately placed in the freezing unit of the refrigerator and in an atmosphere at a 50° C. temperature at a 24-hour interval for a period of two weeks without affecting the general properties in the least. Extremely cold temperatures change the consistency slightly but do not materially reduce its value as a washable base. No separation occurred at dry ice fusion temperature, −57° C., but autoclaving at 15 pounds' pressure for thirty minutes caused separation into a soft wax layer on top and a thick liquid emulsion layer underneath. It can be claimed for this base that extreme temperatures encountered in transporting this preparation would have little effect on its value as a washable ointment base.

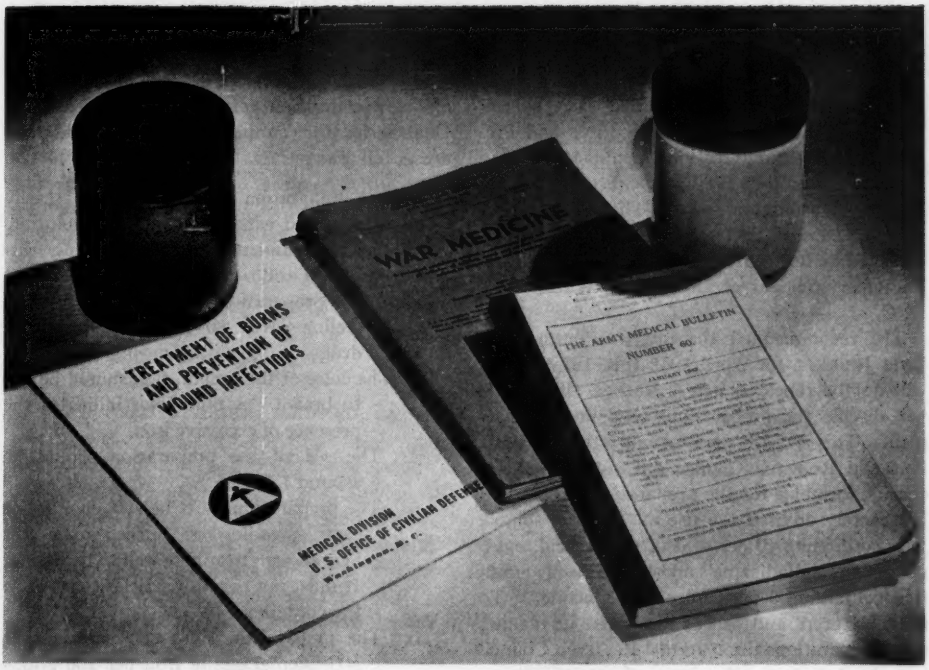
Although stability of this ointment has not been investigated through shelf tests it is fairly certain no change would take place. Several bases containing cetyl alcohol in combination with sodium lauryl sulfate have been prepared in the Laboratory and after seven months on the shelf have not changed in color.

No apparent incompatibilities have been found for this base as far as the experimental work has progressed. Several medicaments extensively used in dermatological practice have been incorporated with success and it is, therefore, of wider application than bases containing triethanolamines and other agents which are affected by acids, alkalies, electrolytes, etc. Thus far, the following ointments have been successfully prepared and in the short period of three weeks have not shown deterioration of any sort:

Coal tar 5%
Burow's solution 10%
Sulfur 15%
Birch tar 10%
Balsam peru 10%
Ammoniated mercury 10%
Ichthammol 5%
Phenol 2%
Whitfield combination
Calamine 17%
Tannic acid 20% (sodium sulfite 0.2%)
Tannic acid 10%, Sulfadiazine 5% (sodium sulfite 0.2%)
Zinc oxide 10%
Sulfadiazine 5%

BIBLIOGRAPHY

[1] *Brit. J. Dermatol. & Syphilol.*, 52 (1940), 21.
[2] *Am. J. Pharm.*, 112 (1940), 281.
[3] JOUR. A. PH. A., 30 (1941), 196.
[4] THIS JOURNAL, 2 (1941), 467.
[5] *Drug and Cosmetic Review* (1938–1939), 148.


TREATMENT OF BURNS AND PREVENTION OF WOUND INFECTIONS
MEDICAL DIVISION
U. S. OFFICE OF CIVILIAN DEFENSE
WAR MEDICINE
THE ARMY MEDICAL BULLETIN
NUMBER 60.

MAKE AVAILABLE THE NEW N. R. C. BURN PREPARATIONS

PROJECT NO. 3 IN A PROGRAM ON PRODUCTIVE DETAILING

by CHARLES HALL EVANS

CHAIRMAN, COMMITTEE ON PROFESSIONAL RELATIONS

PREPARE AND DETAIL THE TANNIC ACID-SULFADIAZINE JELLY, THE SULFADIAZINE EMULSION, AND THE TANNIC ACID-SILVER NITRATE SPRAYS ON WHICH TREATMENT IS BASED

BURNS not only account for a large proportion of warfare casualties, but they are a leading cause of peacetime injuries and even deaths. It has been estimated that some 6000 persons in the United States die each year as a result of burns and for each fatal case there are undoubtedly several hundred cases which are sufficiently serious to require the attention of a physician.

Thus, when the Division of Medical Sciences of the National Research Council, in Washington, makes recommendations on the treatment of burns for the guidance of the Army, the Navy and Civilian Defense Authorities, this information should also be placed before the civilian physicians of the country for use in their practices. Here is a real opportunity for the pharmacist to serve his neighborhood physicians in bringing them the recommendations of the National Research Council and by preparing the jelly, the emulsion and the sprays which they need to follow the suggested therapy.

The detailed recommendations of N. R. C. are published in the *The Army Medical Bulletin* for March 1942; in *War Medicine* for March 1942; and have just been issued in a special booklet entitled, "Treatment of Burns and Prevention of Wound Infections," published by the Medical Division of the U. S. Office of Civilian Defense, Washington, D. C. The latter booklet can be secured from local OCD offices or can be obtained at ten cents a copy (no stamps) from the Superintendent of Documents, Washington, D. C.

The recommended therapy was outlined in THIS JOURNAL for April 1942 (pp. 127–28) and will not be repeated here. Rather, this article will discuss the preparations used in the treatment. This is of the greatest importance, for the National Research Council did not recommend specific formulas for the preparations to be used but merely advised the use of "a water-soluble jelly containing 10 per cent of tannic acid and 5 per cent of sulfadiazine" and "an aqueous emulsion containing 5 per cent of sulfadiazine." To manufacturers and others interested in making such preparations the National Research Council has developed specifications which it believes such products should meet. The specifications have been studied in the Laboratories of the AMERICAN PHARMACEUTICAL ASSOCIATION and formulas for the preparations are suggested herewith for the guidance of pharmacists. Physicians cannot use the new therapy unless someone makes available the preparations needed—why don't you perform this professional service for the physicians in your community? Your local Chief of Emergency Medical Service of OCD will also be interested in the availability of these preparations which are the basis of the OCD burn therapy.

TANNIC ACID-SULFADIAZINE

In the emergency care of a burn it is recommended that the area, other than on the face, hands or genitalia, be covered liberally with a water-soluble jelly containing 10 per cent of tannic acid and 5 per cent of sulfadiazine. The tannic acid precipitates proteins and is used to produce an eschar over the denuded areas in order to prevent the loss of body fluids. The sulfadiazine is used to prevent infection for, although most burns are sterile the instant after they occur, they quickly become contaminated, and infections, usually with a mixture of staphylococci, hemolytic streptococci, colon bacilli and other organisms, frequently develop—a serious complication if it develops beneath an eschar.

The specifications of the National Research Council for the Tannic Acid-Sulfadiazine Jelly are as follows:

1. The preparation must be washable; easily removed with water or saline solution.
2. The medicament must be uniformly dispersed and be of such particle size that the preparation is free from any gritty feeling—over 80 mesh for powdered drugs.
3. The color of the preparation should be tan to brown. A blue color indicates the presence of excessive iron.
4. The *p*H of the preparation should be around 7.5.
5. The preparation must be soft enough for easy spreading on burned area, yet firm enough to adhere well to the lesion. It must not permit particles to settle in the container.
6. The preparation must not contain over 500 micrograms of iron per 100 grams of product.
7. It must be stable over a range of temperature from freezing to 130° F. and must be able to undergo temperatures below freezing without having its normal consistency affected when it is brought back to normal temperature range.
8. It must not permit mold or microorganism growth.
9. It must be protected from excessive discoloration on aging, either by the use of a stabilizer or its method of packaging.
10. It must not dry out or liquefy in the container in a reasonable length of time (1 year).

To meet these specifications the following formula is suggested:

Pectin, N. F. VII	5.0
Tannic acid	10.0
Glycerin	12.0
Sulfadiazine	5.0
Methyl parahydroxybenzoate	0.2
Sodium sulfite	0.2
Ringer's Solution	67.6

Mix well the pectin, glycerin and sulfadiazine to a smooth paste. Dissolve the sodium sulfite, methyl parahydroxybenzoate and

the tannic acid in boiling Ringer's Solution and add to the pectin paste, stirring well until it cools down to room temperature.

The following washable ointment base developed in the Laboratories of the AMERICAN PHARMACEUTICAL ASSOCIATION by E. C. Beeler, and described in detail elsewhere in this issue, is an excellent vehicle for 10 per cent of tannic acid and 5 per cent of sulfadiazine:

Cetyl alcohol	15.
White wax	1.
Propylene glycol	10.
Sodium lauryl sulfate	2.
Water	72.

Melt the cetyl alcohol and white wax in the propylene glycol on a water bath and heat to about 65° C. Dissolve the sodium lauryl sulfate in the water and heat on a water bath to about 65° C. Add the oil mixture to the water mixture slowly and with constant stirring. Continue stirring on the water bath for ten minutes, remove from the bath and continue stirring until congealed.

SULFADIAZINE EMULSION

Tannic acid should not be used on the hands, face or genitalia because the eschar it produces may be sufficiently constricting to damage permanently the muscles and delicate tissues. Therefore, an aqueous emulsion containing 5 per cent of sulfadiazine is recommended for burns on these areas. The N. R. C. specifications for this emulsion are as follows:

1. The preparation must be washable; easily removed with water or saline solution.
2. The medicament must be uniformly dispersed and of such particle size that the preparation is free of any gritty feeling—above 80 mesh for a powdered drug.
3. The preparation should have a *p*H of about 7.5.
4. The preparation should be soft enough to spread easily on the skin or wound, but firm enough not to flow in the container.
5. It must be stable over a range in temperature from freezing to 130° F. and must be able to undergo temperatures below freezing without having its normal consistency affected when it is brought back to a normal temperature range.
6. It must be resistant to color changes for a reasonable time (1 year). Some sulfonamides are incompatible and discolor in certain stearate type bases.
7. It must be free from tendency to rancidify within a year.
8. It must not permit mold or microörganism growth.
9. It must not dry out either in a closed container or in a container being repeatedly opened for use.

The Laboratories of the AMERICAN PHARMACEUTICAL ASSOCIATION suggest several formulas for this preparation. The first utilizes the washable ointment base developed at the University of California School of Pharmacy, described in THIS JOURNAL for December 1941. The formula for the burn emulsion is as follows:

Hexadecyl alcohol (Cetyl)*	6.1
Octadecyl alcohol (Stenol)*	6.1
Sodium lauryl sulfate*	1.4
White petrolatum	13.6
Liquid petrolatum	20.5
Sulfadiazine	5.0
Water	47.3

* Du Pont.

Melt the alcohols together over a water bath at 65° C., add the sodium lauryl sulfate and stir well. Add the white petrolatum and the liquid petrolatum, continuing the heat until the mixture is melted. Add the sulfadiazine and stir until the mixture cools to room temperature. Add the water slowly with constant stirring.

The introduction of pectin in the new National Formulary VII prompts the following suggested formula for the sulfadiazine emulsion:

Ringer's Solution	58.0
White petrolatum	20.0
Glycerin	11.8
Sulfadiazine	5.0
Pectin	5.0
Methyl parahydroxybenzoate	0.2

Wet the pectin and the methyl parahydroxybenzoate with the glycerin, add the Ringer's Solution previously heated to boiling, and stir well to make a smooth paste. Keep the mixture on a water bath and add the sulfadiazine and petrolatum. Remove from water bath and continue stirring until cool.

A third formula, which makes a very satisactory preparation, is as follows:

Cetyl alcohol	10.
Glycerin	10.
Sodium lauryl sulfate	1.
Sulfadiazine	5.
Water	74.

The washable ointment base developed by E. C. Beeler in the Laboratories of the AMERICAN PHARMACEUTICAL ASSOCIATION, described in this article under Tannic Acid-Sulfadiazine Emulsion, is an excellent medium for sulfadiazine.

OPHTHALMIC OINTMENT

If the eyes require treatment, the report recommends the single application of a 2 per cent butyn ophthalmic ointment. Abbott Laboratories offer such an ointment.

TANNING SPRAYS

If facilities for definitive treatment, rather than merely emergency care, are available, the report recommends the careful cleansing of the area and tanning as follows:

Two solutions are used:

1. A freshly prepared 10 per cent solution of tannic acid.
2. A 10 per cent solution of silver nitrate.

Two spray guns are used: one gun contains the tannic acid solution and the second contains equal parts of the tannic acid solution and the silver nitrate solution. Less pain is caused if the tannic acid solution is sprayed on first, followed immediately with the tannic acid-silver nitrate solution. The tannic acid-silver nitrate solution is sprayed on every half hour for four applications. If the tan is still inadequate, the spraying is continued once an hour until the result is satisfactory.

ORAL CHEMOTHERAPY

The report recommends the administration of 1 Gm. of sulfadiazine every 6 hours, day and night, for ten days in cases of suspected infections.

USE THIS PROGRAM

This discussion of the burn preparations recommended by the National Research Council is part of the *Productive Detailing Program* offered by the Professional Relations Committee of the AMERICAN PHARMACEUTICAL ASSOCIATION. Each month the Committee studies the new drugs and new therapies reported in the leading medical journals of the country, selects those which involve the use of medication requiring the services of pharmacists in their compounding.

Through THIS JOURNAL the Committee presents its analyses of the medical reports, giving pharmacists the information they need on formulas and methods of compounding, the advantages of the new preparations, and such other professional material as should be used in presenting the new products to physicians.

Based on the belief that what pharmacists need is not "pep talks" on the benefits of detailing so much as *material on which to detail*, the project actually offers the pharmacist nothing that he couldn't work up himself if he had the time and opportunity to review some 100 odd medical journals each month to keep abreast of current developments, look up the "background" information needed to discuss the new products with physicians, and try out the formulas in order to make such modifications as might be desirable from the pharmaceutical standpoint.

The advantages of this new *Productive Detailing Program* are fourfold:

1. The products detailed are *new* and are welcomed by the physician for every doctor wants to keep his treatments up to date and give his patients the benefit of the latest thoughts of medical authorities.
2. The program gives the pharmacist an opportunity to study the practices of physicians in his community and pattern his approach to fit their needs. It depends upon the individual pharmacist's judgment to see that the physician is detailed only on those preparations in which he would be interested.
3. The information reaches the physician only through interested pharmacists. The doctor, therefore, knows where his patients can obtain the medication and he will advise them accordingly. This factor safeguards the program from defeat in the hands of uninterested pharmacists.
4. The preparations to be detailed represent real contributions to the treatment of disease. They are preparations of sufficient importance to be published originally in medical journals. Clinical evidence supports the new products and the appeal to physicians is on the merit of the preparations rather than on an "I can make it cheaper" basis.

Whether this program becomes the most singularly effective means of aiding the pharmacist in rendering increasingly important services to his physicians and thereby expanding his professional practice, or whether it exists as merely a series of articles to be read casually and put aside *depends upon the individual pharmacist.* There is only one man who can put this program across in your community—and that is *YOU.*

THIS IS *YOUR* PROGRAM

THIS dynamic new detailing program, sponsored by the Professional Relations Committee of the AMERICAN PHARMACEUTICAL ASSOCIATION, supplies a service heretofore unavailable to pharmacists. It is a program that places in your hands each month complete information concerning some new, significant development in therapeutics in which practicing physicians will be interested. Each of the new therapies involves the use of medicaments which require pharmaceutical service.

Most physicians want to keep their treatments up-to-date with new therapeutic advances and most pharmacists want to extend the scope and character of their professional services—this program serves both.

Try out this program in your community and let us have the benefit of your comments and criticisms so that we may make future projects in this series of even greater value to you.

RATIONAL PRESCRIPTION WRITIN

by HERMAN GOODMAN, M. D.

OF NEW YORK

A REVIEW AND ANALYSIS OF THE MODE OF APPLICATION OF MEDICAMENTS IN THE THERAPY OF SKIN CONDITIONS

IT HAS been common for many years to decry the made-to-order prescription suggestions for the treatment of diseases of the skin. Active medicaments are advised, but the mode of application is ignored. For the most part, physicians recall the pharmacology of cutaneous applications sufficiently to take advantage of the reducing agency of a large number of drugs. The theories of the late Paul Unna may not satisfy all the requirements of modern reduction-oxygenation ideas. However, they retain sufficient clinical responses to be worth remembering. In this presentation, little will be said of active agents. The response to be anticipated by the mode of application will be stressed.

CREAMS

The dermatologist rarely intentionally prescribes or orders a pharmacist to prepare a cream with U. S. P. and N. F. ingredients. The reason is that patented medicaments and chemicals may not be included in these official lists. Modern cosmetic creams available for physicians and pharmacists are made with patented material. Creams may be defined as mixtures of fat and fatlike substances bound with water through physical, chemophysical or chemical intermediaries, or mixtures of them. In an older day of cream making, certain physiochemical components of hydrous wool fat were utilized. Thus, wool fat and hydrous wool fat are well known. Soap was another favorite medium for binding fat and fatlike substances with water.

Hydrous wool fat emulsions (an emulsion is defined as a close union of otherwise immiscible fat and fatlike substances with water) are still popular. They have a decided field of application in dermatology. The intermediary is recognized as one or another of the oxycholesterol quotients of hydrous wool fat. Soap-bound creams are ordinarily made through monovalent metallic salts (sodium, potassium or ammonium) and fatty acid through saponification (defined as the formation of soap within the formulation of the cream). The saponified cream is unable to tolerate electrolytes and hence is a poor medium or vehicle for active medicaments.

The art and science of making creams creates emulsions through mechanical agitation. Intermediaries may or may not be added. Pectin has been included in the list of physical intermediaries or stabilizers for dermatologic creams. The sulfonated oils are valuable binders of the chemophysical class. Diglycol laurate and diglycol stearate are new chemicals available for the chemical binding of otherwise immiscible fat and fatlike substances and water.

Emulsions are classified according to whether they are oil-in-water or water-in-oil emulsions. They are either thick (creams) or thin (milk or lait). Emulsions are also divided into temporary (not desirable) and permanent types.

HIGHER ALCOHOLS

The higher alcohols, cetyl, stearyl, octyl and their combinations, are increasingly important ingredients of greases and more especially of creams. Cetyl alcohol may well be added to any pomade or grease or its water-added counterpart, cream. The addition of no more than 2 per cent improves any such application for the skin, improves the appearance of the finished product and improves the appearance of the skin at the site of application. The cetyl alcohol component causes the skin to assume a velvety sheen and feel. The cetyl alcohol assists in combining fat and fatlike materials and water through a physical binding power. Cetyl alcohol is commercially available under many guises and in various percentages of purity to 99 per cent at increasingly higher cost. It is essential to have the purveyor present an analysis of the product purchased with a statement of its physical properties.

Stearyl and octyl alcohols are available for the

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most part in commercial combinations. Although the trade names may remain unchanged, it is possible that the ingredients or their proportions may vary in different samples or lots. The higher alcohols in solid form present unusual opportunities for experimentation in formulation of pomades and creams with the advantage of acting as if completely absorbed by the skin or the scalp. Creams prepared with combinations of these solid alcohols are water removable without agitation. The injured skin or scalp is thoroughly and rapidly cleansed without the addition of irritation through the detergents required for the removal of conventional fat or cream bases. The higher alcohols in bases for creams permit the incorporation of electrolytes without destroying the emulsion-like characteristics of the cream vehicle.

The inactivity to *p*H of creams prepared with glyceryl monostearate brings this product to the attention of dermatologists. The finished cream is easily made, and almost no attention need be paid to incompatibility. Acid and alkaline remedies may be added without breaking the emulsion.

Results from the application of creams prepared with these higher alcohols have been uniformly excellent. They should be freely prescribed as soon as they are generally available in pharmacies.

Sulfonated oils, such as sulfonated castor oil, sulfonated olive oil and sulfonated coconut oil, are available in various degrees of sulfonation. These make ideal soapless shampoo ingredients and are rarely the cause of any untoward reaction. The sulfonated oils are readily miscible with water. They may be dispensed diluted or modified by the addition of liquid petrolatum. Sulfonated oils disperse readily; hence the sulfonated castor oil, for example, is a good menstruum for medicaments intended for the bath.

LOW VISCOSITY MINERAL OIL

The mention of liquid petrolatum suggests the need of insisting at this place that neither the light nor the heavy liquid petrolatum of the United States Pharmacopœia should be compounded for cutaneous applications. A low viscosity liquid petrolatum, with a viscosity between 55 and 80, is recommended for incorporation in prescriptions intended for the skin or scalp.

The trade names for creams, such as shaving cream, cleansing cream, vanishing cream, brushless shaving cream and cold cream, do not indicate the mode of preparation or the ingredients. The cold cream given in the United States Pharmacopœia, Rose Water Ointment, is a finely balanced, relatively expensive, permanent emulsion of the thick type, intolerant of active elec-

trolytes. A pharmacist knowing its weakness does not mix salicylic acid with it, for example. If the prescriber designates this particular ointment, the pharmacist substitutes a non-official cream, with or without consent for this combination. A physician blames the pharmacist who follows his order for a poor salicylic acid cream and lauds the pharmacist who has made a substitution.

The following formulas for cream are suggested:

SOFT TRIETHANOLAMINE SOAP CREAM

Stearic acid	4 Gm.
Hydrous wool fat	4 Gm.
Cetyl alcohol	2 Gm.
Liquid petrolatum	4 cc.
Corn oil	4 cc.
Triethanolamine	1 Gm.
Water, enough to make	100 Gm.

Melt the solids in mixture of warmed oils, and stir with warmed water into which the triethanolamine has been dissolved

VANISHING CREAM BASE

Glyceryl monostearate	12 Gm.
Yellow wax U. S. P.	2 Gm.
Glycerin	6 cc.
Corn oil	4 cc.
Water, enough to make	100 Gm.

Heat together until solids are melted, and stir to form cream.

HAND CREAM

Glyceryl monostearate	16 Gm.
Hydrous wool fat	4 Gm.
Cetyl alcohol	1 Gm.
Liquid petrolatum	4 cc.
Cottonseed oil	4 cc.
Corn oil	4 cc.
Water, enough to make	100 Gm.

Melt solids in mixture of warmed oil, and stir with solution of glyceryl monostearate in hot water.

CLEANSING CREAM

Yellow wax U. S. P.	4.0 Gm.
Stearic acid	0.6 Gm.
Sesame oil	60.0 cc.
Corn oil	2.0 cc.
Cottonseed oil	2.0 cc.
Hydrogenated oil	12.0 Gm.
Sodium borate	0.6 Gm.
Water, enough to make	100.00 Gm.

Melt the solids; add the warmed liquids, and mix with solution of sodium borate in water warmed in separate container.

It is of the greatest importance that such articles as this, which appears in the current issue of *Archives of Dermatology and Syphilology*, be read by prescription pharmacists in order that they may share with dermatologists the suggestions of such authorities as Dr. Goodman. This JOURNAL is indebted to the American Medical Association for permission to reprint the article in full.

GREASES

Pomades or greases, also known as ointments and including bases for pastes, may be defined as mixtures of fats and fatlike substances physically bound together, essentially free of water. Greases may include other ingredients, medicaments or modifiers conveying activity, depending on whether they are inert or active. Greases or ointments to be effective on the skin must have melting points approximating the temperature of the skin at the site of their application. Greases engender heat and cause congestion. They adhere to the part, prevent evaporation of fluids and afford physical protection.

In earlier practice, animal fats predominated in grease bases. Lard and hydrous wool fat appeared in the formularies. Lard has been replaced in official ointments during the past decade. The oxycholesterol quotients are utilized instead of the hydrous wool fat. Mineral greases and oils prevail. Amber, white and liquid petrolatum are popular.

The conventional ideas and concepts of an ointment base called endodermic, as distinguished from epidermic, are accepted. The former has a vehicle intended to permit activity within the skin. The latter (epidermic or superficial) has a vehicle intended to limit the activity to the surface of the skin. To complete the picture, one includes the diadermic ointment base, assumed to permit or assist the passage of medicaments through the skin.

There is much controversy regarding the actual limitations or possibilities of these classes of ointment bases. The available evidence is far from convincing. All of it purporting to prove the possibility of penetration or absorption through the healthy unbroken epidermis should be reviewed and repeated by impartial, competent laboratory investigators with significant control

experiments. This doubt does not prohibit giving definitions.

EPIDERMIC BASES

Epidermic ointment bases do not have much, if any, reputation for permitting penetration of included medicaments into the skin. Mineral oil (liquid petrolatum), mineral greases and mineral waxes are ingredients of epidermic ointments. Combinations of mineral greases offer fairly low melting points, at least a few degrees below the temperature of the mouth.

ENDODERMIC BASES

Endodermic ointment bases have the reputation of permitting penetration of included medicaments into the depth of the skin. Lard, wool fat and hydrous wool fat have the reputation of being valuable as bases for endodermic ointments. They offer certain definite objections as sole ingredients.

DIADERMIC BASES

Diadermic ointments have the reputation of permitting penetration of included medicaments through the skin into the organism. Certain volatile drugs enter the blood stream and give measurable effects on application in a diadermic ointment base. The mode of entry may have been through the air passages rather than through the intact skin. Goose grease was offered as a vehicle for diadermic ointments in the early days of pharmacy. Few city pharmacies stock it nowadays.

Space does not permit a discussion here of the biologic or chemical activities in the field of emulsification of animal grease ointment bases as contrasted with mineral grease ointment bases. A definite loss has been sustained by the acceptance of mineral fats and fatlike substances for the animal fats.

HYDROGENATED FATS

Hydrogenated fats are available on the market with all degrees of hydrogenation. The commercial household hydrogenated oils and fats, recognized as shortening and used as substitutes for butter in frying, baking and other cooking, are available for grease, ointment and paste vehicles. There is a modicum of nickel catalyst present, but this does not interfere with the finished ointment-like product. Individual experimentation will be required for each trademarked hydrogenated oil or fat preparation to determine the percentages needed for specific melting point combinations with oils and other fats.

Cerates are combinations of fatty bases and animal waxes not soft enough to melt and run when applied to the skin.

Pastes are ointment-like mixtures of powders with equal parts of glycerin, soft soap, petrolatum, lard or some other fat or fatlike combination or mixture. Pastes are protective; they act to soften the surface they cover, yet they are more or less porous, being permeable to perspiration, and act to relieve congestion. Bentonite is a good carrier for chemical reducing action in pastes.

STARCH PASTES

A former popular prescription for a paste included 25 per cent of starch. Nearly all formularies have this prescription, and many physicians order it. The type of starch incorporated in the product is of great importance. Most pharmacists, including those of large dermatologic clinics and hospitals, mix dry starch with the other powders and agitate into the fat menstruum. A more desirable and rational product is formed if the starch is first hydrolyzed by agitation in cold water, followed by heating with constant stirring to form a paste.

The following formulas for greases are suggested:

SULFUR OINTMENT

Washed sulfur	20 Gm.
Potassium carbonate	10 Gm.
Water	10 cc.
Wool fat	10 Gm.
Hydrogenated oil, enough to make	100 Gm.

Dissolve the potassium carbonate in water; incorporate with wool fat, and mix intimately with powdered sulfur and hydrogenated oil.

MODIFIED STARCH AND ZINC PASTE

Starch	25 Gm.
Water	50 cc.

Rub until smooth; heat with constant stirring to form paste.

Zinc oxide	25 Gm.
Liquid petrolatum	25 cc.
Hydrous wool fat	25 Gm.

Mix.

OINTMENT BASE

Solid alcohol (cetyl-stearyl,) self-emulsifiable	30 Gm.
Hydrous wool fat or petrolatum	30 Gm.
Water, enough to make	100 Gm.

Melt the solids, and mix with warmed water, stirring to cream.

SKIN PEEL (SUPERFICIAL) PASTE

Resorcinol	40 Gm.
Zinc oxide	10 Gm.
Bentonite	6 Gm.
White petrolatum, enough to make	100 Gm.

Mix the powders, and incorporate into the grease.

SCALP POMADE

Resorcinol monoacetate	4 Gm.
Castor oil	30 cc.
Sesame oil	30 cc.
Cetyl alcohol	2 Gm.
Ceresin	20 Gm.
Hydrogenated oil and Petrolatum, of each enough to make	100 Gm.

SOLUTIONS

Solids, liquids and gases completely dispersed in fluid mediums are recognized as solutions. Solutions present pharmacologic opportunity for the dermatologist according to the fluid medium and according to the material dissolved therein. Aqueous solutions of volatile substances are called waters; solutions of non-volatile substances are called liquors, and tinctures are alcoholic or hydroalcoholic solutions of active principles of animal or vegetable drugs or chemicals. A favorite tincture in dermatology is tincture of iodine. It is offered for some phases of the common cutaneous affliction, tinea of the toes. A variation of a diluted tincture of iodine with the addition of tincture of aconite is therapeutically more efficient than the tincture of iodine alone. The combination must be applied with some caution, as a few persons are sensitive to aconite. For the most part, solutions, particularly aqueous ones, are cleansing, relieve congestion, allay irritation and soften the corneum irrespective of the materials in solution.

Industrial research has offered the medical art many new solvents. These require much study, and few have been accepted by the official pharmaceutic groups. The possibilities of toxic reactions from the host of glycols must not be forgotten. Physicians who prescribe must be doubly cautious, since they treat the abnormal or diseased skin. The cosmetician and the beauty chemist assume risks that physicians must avoid. Theoretically, the beautician dispenses for the normal, healthy and unbroken surface of the skin.

Ethyl alcohol and isopropyl alcohol are available as liquid vehicles either alone or with water (hydroalcoholic) or with mixtures of glycerin and water. Evaporation of alcohol is cooling in sensation and in effect. Its action is rapid, hence short in duration for each application.

LOTIO ALBA

One solution has been miscalled a lotion for upward of six decades. Lotio alba, or white lotion N. F., has fallen into disfavor because of this error. As properly written and prepared, white lotion (to retain its popular but misleading name) is actually a solution of hydrogen sulfides in water with a suspension of insoluble precipitate resulting from the interaction of the aqueous solutions of its ingredients (acid zinc sulfate and alkaline sulfurated potash—not potassium sulfide).

The active ingredient of the so-called white lotion is actually a gas having the characteristics of a reducing agent in the sense of Unna. The gas is in solution in the supernatant liquid of the "lotion" and also held in the precipitate. The preparation known as solid lotio alba, made by the interaction of a high concentration of zinc sulfate and sulfurated potash, is pharmacologically unsound. The gas evolved passes into the atmosphere of the pharmacy. Only the portion of the gas captured physically by the otherwise inert precipitate is temporarily available to act on the skin. The addition of a powder or the decantation of the supernatant fluid to prepare "solid lotio alba" is sophistry and denotes ignorance of the mode of activity of the preparation.

The following formulas for solutions are suggested:

TINCTURE OF IODINE AND ACONITE DILUTED

Tincture of iodine	10 cc.
Tincture of aconite	10 cc.
Alcohol, enough to make	100 cc.

Mix.

SCALP WASH

Quinine bisulfate	1 Gm.
Beta naphthol	4 Gm.
Sulfonated castor oil	12 cc.
Isopropyl alcohol	50 cc.
Water, enough to make	100 cc.

Mix.

TWO BOTTLE "WHITE LOTION"

1.	Zinc sulfate	8 Gm.
	Water	50 cc.
2.	Sulfurated potash	8 Gm.
	Water	50 cc.

Dissolve each separately; filter each, and dispense in two bottles.

Directions: Apply liquid from bottle 2 to affected skin in thin layer, and follow with some from bottle 1.

LOTIONS

Technically, lotions are suspensions of insoluble powders in a fluid. The liquid vehicle adds certain characteristics to the powders.

The evaporation of the fluid vehicle increases the sensation of cooling and causes a further decongestion of the part. The presence of a well-chosen fluid medium permits even application. This may be counteracted by unevenness of the sample, as when the powder clings to the container or sinks to the bottom of the bottle. The addition of liquid petrolatum, glycerin or its substitutes may aid in uniform suspension of prescriptions. They do not insure permanence of suspension. Sooner or later the powder ingredients sink to the bottom of the container. The lotion spread on the surface of the skin becomes a false sample of the prescription. Conventional lotions (insoluble powders in liquid) offer ever-changing applications to the skin as the insoluble powders remain at the bottom of the jar or bottle and the liquid with the lighter powders is removed.

Bentonite is an ingredient of lotions (insoluble powders in liquid). The bentonite acts to suspend the heavy powders in the fluid medium leading to more elegant-appearing preparations and more equitable samples for each application.

SODIUM HEXAMETAPHOSPHATE

The water-modifying action of sodium hexametaphosphate should be utilized in prescriptions written for the care of the skin and scalp. Water modified by means of this agent provides softened water for external applications, especially desirable for application of aqueous medicaments on the scalp. Sodium hexametaphosphate for modifying bath water fills a need in areas in which only hard water is available; it permits liberal lathering of conventional soaps and complete removal of any multivalent mineral insoluble soaps formed during the process of washing. The possibility of irritation of the skin through the formation of spicules of calcium or magnesium insoluble soaps within the openings of hair follicles should not be ignored.

LINIMENTS

Nearly all formularies offer a modification of the lotion through the addition of an oil with free fatty acid and name the result a liniment. The best known is the liniment of calamine and zinc. The vehicle originally was solution of calcium hydroxide, and it is agreed the combination of linseed oil and solution of calcium hydroxide through agitation formed a variety of soap. The method of improving the sample applied to the skin through near neutral soap suspension may be improved by substitution of a modern stearic acid, triethanolamine soap solution, as a vehicle for the suspended insoluble powder ingredients of the lotion-liniment. Calamine, for example, remains suspended in such a modified lotion without settling, and the first application is similar to the last from the one jar.

The following formulas for lotions are suggested:

WATER MODIFIER

Sodium hexametaphosphate	5 Gm.
Distilled water, enough to make	100 cc.

Dilute as required to less than 1 per cent. Use as a vehicle for lotions.

CALAMINE SUSPENSION

Stearic acid	4 Gm.
Triethanolamine	1 Gm.
Water, enough to make	100 Gm.
Zinc oxide	8 Gm.
Prepared calamine	8 Gm.

Melt stearic acid, and mix with triethanolamine dissolved in hot water to form emulsion. Add the powders and stir.

POWDERS

Powders may be defined as solid drugs in finely divided form. The action of the powder applied to the skin depends on certain physical characteristics of the powder and on the surface of the skin. Powder is cooling because it increases the available surface for evaporation of surface fluids. The physical presence of adherent powder affords protection. An absorbent powder acts to dry the surface. Congestion is relieved on the part covered by the powder.

In earlier practice, botanicals predominated in powder base formulas. Flour, starch and orris

appeared in the formularies. In modern times, mineral materials are employed. Talc, zinc oxide, kaolin and calcium carbonate are popular. Also, such chemicals as stearates and oleates have displaced many botanicals and minerals.

Certain characteristics of powder formulation must be appreciated before one writes a prescription. There are good characteristics, and there are bad characteristics. Caking, hardening and spiky feel are the bad characteristics. One seeks to avoid them by making the proper choice of ingredients and by proper pharmacy. What are the good characteristics? The powder must be homogeneous. It must spread freely and smoothly. It must have a silky texture. It must adhere to the part. It should give a smooth, soft and pearly finish to the skin.

The degree a powder possesses one or another of the characteristics named depends on the intended site for its application and on the ultimate purpose of its powder nature. A powder designed for the face must have ingredients leading to adherence. A foot powder, for sprinkling into the socks or into the shoes, need not have the character of adherence. A foot powder may be formulated without any adhering materials. Other characteristics of a powder are bulk and coverage.

The dermatologist conscious of pharmacy and pharmacology outlines his prescription for a powder base on this plan: (1) bulk, or volume to weight; (2) slip, or even distribution; (3) coverage, or opaque making, and (4) adherence, or stick. The physician predetermines whether the powder is wholly for one or another of these characteristics; whether it should satisfy more of one than another, or whether there should be a share and share alike proportion.

BULK

For a powder to be applied, sprayed or shaken on the skin after a bath, for example, the characteristic sought is bulk, predominantly bulk—much volume for weight. The ingredient selected must have a low density. The carbonates are available. The choice depends on the need for inclusion of other metallic salts, since one ordinarily limits possible conflict by inclusion of one metal ion. Zinc carbonate calls for zinc stearate, for example; magnesium carbonate would be coupled with magnesium stearate. This provision extends only to a few ingredients, not to all. Zinc oxide, for example, is prescribed with other metals, probably because it does not ionize.

SLIP

A powder may be for the lower portions of the arms or the backs of the hands. Mere bulk does not suffice. The powder must apply evenly; it must have the character of slip. The main ingredient offering slip is the finest grades of talc. Talc is prescribed under the condition named, to satisfy the requirement for slip, for smooth application.

COVERAGE

It may be held desirable that the powder possess characteristics of coverage, to cover a blemish, to camouflage the covered surface or to render the natural skin surface opaque. Two ingredients are available. Zinc oxide gives coverage and is available standardized according to United States Pharmacopœia minimum requirements from pharmacies. Another ingredient giving three times as much coverage for equal bulk as zinc oxide is titanium dioxide. However, the available titanium dioxide has rarely met the severe criteria for low heavy metal content in arsenic set by authorities.

ADHERENCE

The next character required of many powders is adherence. The powder is designed to stick to the part. Some skin has a self-made supply of adherent material in the form of superficial greasiness. Surface discharge of excessive amounts of sweat or sebaceous glands or products of cutaneous irritation acts as adherent quotients. Other skin is poor in such adherent qualities. The stearates supply stick characteristics to a powder. A dry skin requires more stearate than a greasy skin for stick purposes.

The purpose formula given earlier translated into an ingredient formula for a powder base is as follows: zinc carbonate, talc, zinc oxide and zinc stearate. In a mixture of powders it is thought desirable that the metal should be the same for both, as with sodium carbonate and sodium stearate. It is regarded as poor technique to order a mixture of magnesium carbonate and zinc stearate, for example. The prohibition is valid only for certain chemically active powders.

BENTONITE

The water-absorbing properties of bentonite, or Denver clay, should be utilized in prescribed powders for contiguous cutaneous surfaces.

Foot-dusting powder as well as tooth powder is fortified with advantage by the addition of a small percentage of this clay. Bentonite is an ingredient of modified powder applications, as in the form of a poultice. The dried bentonite resulting from the application of a poultice to the facial skin results in rhythmic self massage and simulates astringent action.

BORATED DUSTING POWDER

Boric acid	4 Gm.
Zinc carbonate	10 Gm.
Zinc stearate	16 Gm.
Kaolin	10 Gm.
Purified infusorial earth	10 Gm.
Talc, enough to make	100 Gm.

DEODORANT FOOT POWDER

Oxyquinoline sulfate	2 Gm.
Zinc oxide	10 Gm.
Talc, enough to make	100 Gm.

SUMMARY

This paper has considered the action and purpose of medicaments prescribed for application to the skin by physicians according to the form in which medicament is ordered. Bases of creams, greases, solutions, lotions and powders were subjected to study, leading to a rationale of therapy founded on the indicated requirements of the skin to be treated. The choice of the proper base is as important as the inclusion of the active medicament. Empiricism declines in therapeutics so considered. More attention must be given to the phase of response to insult of the skin. It becomes apparent that decongestive lotions by day are not compatible with congestive ointments by night, a device utilized by many physicians and not a few specialists. Official medicaments and drugs must be augmented by patented materials to insure increasingly improved compounding of prescriptions intended for alleviation of cutaneous conditions. The product of research in allied fields, such as the manufacture of synthetics, laundering, food production and animal husbandry, must be utilized. A few products have been named as gathered from these. Many more are already incorporated in professional cosmetics. Illustrative prescriptions are suggested for further experiment. With wider study physicians will devote more attention to prescribing for the patient with a cutaneous disease.

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OBITUARY

OTTO FERDINAND AUGUST CANIS

Dr. Otto F. A. Canis, Professor of Pharmacy at the Fordham University College of Pharmacy, New York, died at his home in Kew Gardens, Queens, on July 10.

Dr. Canis was born in New York City on January 30, 1894. He attended the public schools of that city and was graduated by the Fordham College of Pharmacy in 1914, one of seven members of the first class in the newly organized school under the deanship of the late Dr. Jacob Diner. In 1926 he received the degree of Doctor of Pharmacy at Fordham.

Dr. Canis owned a pharmacy for seven years before he devoted his full time to teaching. He served on many important committees of the New York State Pharmaceutical Association and as a member, and one time president, of the New York State Board of Pharmacy. During World War I Dr. Canis served in France for a year and a half as a member of Base Hospital 42 staff of the University of Maryland. He was a member of the AMERICAN PHARMACEUTICAL ASSOCIATION.

In 1937 his Alma Mater conferred upon him a Gold Medal *"Bene Merenti"* for his twenty years of service and loyalty to the college, with this citation:

"On many occasions Fordham University has been most delighted to honor various members of her faculties, who have for twenty or more years maintained loyalty, energy and devotion in the performance of those duties associated with their respective offices. Never before, however, has she felt the double joy of being able to confer such an honor on the first student to register in one of her colleges. She is especially proud, too, that she is able to confer this honor on the occasion of the silver jubilee of that college, and this to one who has consistently brought distinction to the faculty of the college and to his profession. Fordham University with all eagerness seeks to recognize his many achievements."

CHARLES E. CASPARI

Dr. Charles E. Caspari, Dean and Emeritus Professor of Chemistry of the St. Louis College of Pharmacy, died at his home in University City, Mo., on June 9, 1942. He was 67 years of age.

Dr. Caspari was born in Baltimore, Md., in a room over a pharmacy which had been conducted by both his father and his grandfather. His father sold the pharmacy in 1894 to devote his full time to the deanship of the Maryland College of Pharmacy.

Dr. Caspari received his primary education in the public schools of Baltimore and attended Johns Hopkins University where he received his A.B. and Ph.D. degrees. During the last two years of his collegiate course he worked as assistant to Ira Remsen, in whose laboratory saccharine was discovered.

The year following his graduation Dr. Caspari served as an assistant to Marston T. Bogert in organic chemistry at Columbia University. In 1901 he accepted a position as research chemist with the Mallinckrodt Chemical Works in St. Louis. A continuing urge to teach caused him to accept the professorship in chemistry in the St. Louis College of Pharmacy in 1903 where he taught until 1930, after which he was Emeritus Professor of Chemistry. He was an inspiring teacher of chemistry and a most exacting one, as his many students vividly recall. In 1926 he was made Dean of the college which position he occupied at the time of his death. As Dean, in addition to the activities of that office, he performed many of the duties commonly associated with the president of a college, particularly in the field of finance. The welfare of the college he served was always foremost in his mind and he served it exceptionally well.

During a period of thirty years, from 1910 to 1940, he served as a member of the revision committee of the United States Pharmacopœia. For many years he acted as consulting chemist to several large manufacturing firms. In this work his keen analytical mind proved extremely valuable. His services as a consultant were in such demand that in 1930 he resigned as Professor of Chemistry in order to be free to devote more of his time to his other work.

He was a member of the AMERICAN PHARMACEUTICAL ASSOCIATION and rarely failed to attend the annual meetings of this Association and of the American Association of Colleges of Pharmacy, in both of which he always took an active part. He was a member of the American Chemical Society and served as chairman of the St. Louis Section. He was a Fellow of the American Association for the Advancement of Science and a member of the Franklin Institute of Philadelphia and the Chemists' Club of New York. He was a life member of the Missouri Pharmaceutical Association. He also held membership in Bellerive Country Club, University Club, Missouri Athletic Club and Noonday Club.

USE THIS GUIDE →

Because such governmental orders as the quinine restriction, the tin tube regulations and the price ceilings on certain chemicals have been issued at various times and, in addition, have been amended one or more times, THIS JOURNAL has compiled the Ready Reference Guide, beginning on the opposite page, to enable pharmacists to have, in one table, a summary of all such orders as amended up to July 15.

READY REFERENCE GUIDE TO OPA-WPB ORDERS

AS OF JULY 15, 1942

ACETYLSALICYLIC ACID is covered by an OPA price ceiling which prohibits sales by resellers, including wholesale druggists, in excess of the following prices, f. o. b. the reseller's shipping point: 1-pound cartons, 73 cents; 1-pound canisters, 77 cents; 1-pound bottles, 82 cents. Pharmacists must keep available for inspection for one year their wholesaler's invoices showing the date of sale, name and address of buyer and seller, price paid, specifications, and quantity including kind and size of container.

AGAR may not be purchased, sold or used except as specifically ordered by the Director of Industry Operations of WPB or for incorporation into bacteriological media. Purchasers of agar for bacteriological media must furnish the seller a written statement in duplicate, manually signed by a responsible official, in substantially the following form:

"I require .... pounds of agar for incorporation into bacteriological media. I have .... pounds in my possession or under my control, leaving a shortage of .... pounds which I must fill by purchase."

Name.....
Address.....

The use or sale of stocks of agar of less than 50 pounds on hand February 9, 1942, are exempt from the order.

ASCORBIC ACID is covered by an OPA price ceiling which prohibits sales by resellers, including wholesale druggists, in excess of the following prices, f. o. b. the reseller's shipping point: 1 to 5 ounces, $2.41 an ounce; 5 to 25 ounces, $2.30 an ounce; 25 to 50 ounces, $2.24 an ounce; 50 to 100 ounces, $2.20 an ounce; 100 to 500 ounces, $2.17 an ounce; 500 to 1000 ounces, $2.16 an ounce; 1000 ounces or more, $2.15 an ounce. No additional charge for containers may be made. Pharmacists must keep available for inspection for one year their wholesaler's invoices showing the date of sale, name and address of buyer and seller, price paid, specifications, and quantity including kind and size of container.

CINCHONA BARK in stocks of more than 50 pounds physically located at any one place on April 4 may not be sold, transferred, delivered, purchased, accepted, processed or combined with other materials except for primary use for the extraction of quinine or totaquine. Cinchona bark which had been combined or compounded with other medicinal agents on or before April 30 is exempt from the order.

Stocks of over 50 pounds must be reported to WPB on Form PD-401.

Sales, transfers and deliveries of cinchona bark may be made only upon receipt of a certificate manually signed by the purchaser or the person accepting the transfer or delivery, or a duly authorized official in substantially the following form and specifying on the reverse side the quantity involved in the transaction.

"I hereby certify that the cinchona bark ordered hereby is for primary use for the extraction of quinine on totaquine and will not be sold, transferred or delivered by me for any other purpose. This certification is made in accordance with the terms of General Preference Order No. M-131 with which I am familiar."

Name.....
By.....

CINCHONIDINE alkaloid, its salts and derivatives, may not be sold, transferred, delivered, purchased, accepted, processed or combined with other materials except for use as an anti-malarial agent. Cinchonidine which had been combined or compounded with other materials on June 19 is exempt from the order.

Stocks of cinchonidine which with stocks of cinchonine and/or quinidine on hand June 19 totaled more than 10 ounces, had to be reported to WPB on Form PD-401A by July 10.

Sales, transfers and deliveries of cinchonidine, except to ultimate consumers, may be made only upon receipt of a certificate manually signed by the purchaser or the person accepting the transfer or delivery, or a duly authorized official in substantially the following form and specifying on the reverse side the quantity involved in the transaction.

"The undersigned hereby certifies that the cinchonidine (or product containing cinchonidine) ordered hereby is for use as an anti-malarial agent and will not be sold, transferred or delivered by the undersigned for any other purpose. This certification is made in accordance with the terms of Conservation Order No. M-131-a with which the undersigned is familiar."

Name.....
Date.....
By.....

CINCHONINE alkaloid, its salts and derivations, may not be sold, transferred, delivered, purchased, accepted, processed or combined with other materials except for use as an anti-malarial

agent. Cinchonine which had been combined or compounded with other materials on or before June 19 are exempt from the order.

Stocks of cinchonine which with stocks of cinchonidine and/or quinidine on hand June 19 totaled more than 10 ounces, had to be reported to WPB on Form PD-401A by July 10.

Sales, transfers and deliveries of cinchonine, except to ultimate consumers, may be made only upon receipt of a certificate manually signed by the purchaser or the person accepting the transfer or delivery, or a duly authorized official in substantially the following form and specifying on the reverse side the quantity involved in the transaction:

"The undersigned hereby certifies that the cinchonine (or product containing cinchonine) ordered hereby is for use as an anti-malarial agent and will not be sold, transferred or delivered by the undersigned for any other purpose. This certification is made in accordance with the terms of Conservation Order No. M-131-a with which the undersigned is familiar."

Name.....
Date.....
By.....

CITRIC ACID is covered by an OPA price ceiling which prohibits sales by resellers, including wholesale druggists, in excess of the following prices, f. o. b. the reseller's shipping point: in 5-pound containers—granular, fine granular, crystal, or powdered, 38 cents a pound; anhydrous, granular and fine granular, 41 cents a pound; anhydrous powdered, 42 cents a pound. No additional charge for containers may be made. Pharmacists must keep available for inspection for one year their wholesaler's invoices showing the date of sale, name and address of buyer and seller, price paid, specifications, and quantity including kind and size of container.

COMBINATION SETS, in the retailer's stock on June 15, 1942, containing shaving cream or toothpaste in tubes, the values of which products do not exceed 25% of the total value of the package, may be sold without requiring used tube exchange if the sets are delivered or sent direct by the retailer to a member of the U. S. Army, Navy or Coast Guard.

COST-OF-LIVING commodities, under the terms of the General Maximum Price Regulation, must be marked with their maximum prices in a manner plainly visible to, and understandable by, the public. The price may be marked on the commodity, on the shelf or bin, or on a sign near the goods. The price must be stated as follows: "Ceiling Price $...." or "Our Ceiling $....." Cost-of-living commodities carried by most drug stores, are cigarettes, smoking tobacco, aspirin tablets, milk of magnesia (liquid), cod liver oil (liquid), epsom salts, boric acid, castor oil, mineral oil, witch hazel, rubbing alcohol, hand and toilet soaps, dentifrices (paste, powder and liquid), shaving cream, tooth brushes, sanitary napkins, razor blades, facial tissues, all types of infant food, bulk and packaged ice cream, and toilet paper.

A statement of maximum prices charged for cost-of-living commodities had to be filed with Local Price and Rationing Boards by July 1. This list must be kept up to date by filing, on the first day of each month, a statement of the maximum prices for any cost-of-living commodities newly offered for sale during the month.

MAXIMUM PRICES of every commodity in the store must be listed in a statement which the retailer keeps available for examination by any person who requests it.

PRICES charged by retailers for commodities and services, under the terms of the General Maximum Price Regulation, must not be higher than the seller's maximum price charged for such commodity, or service during the month of March, 1942. In the case of a commodity or service which the retailer did not sell or render during March the maximum price is the price at which he offered that commodity or service during March. In the case of a commodity or service which he did not sell or offer during March the maximum price is the maximum price of the similar item on which he had the greatest volume of sales during March. If the retailer has no similar item to use as a guide he must charge no more for the commodity or service than his most closely competitive retailer charged for the same or similar commodity or service. If none of these methods is applicable the G.M.P.R. prescribes a formula for the retailer to determine the maximum price subject to the approval of OPA.

QUINIDINE alkaloid, its salts and derivatives, may not be sold, transferred, delivered, purchased, accepted, processed or combined with other materials except for use

(1) as an anti-malarial agent,
(2) in the treatment of cardiac disorders.

Quinidine which had been combined or compounded with other materials on June 19 is exempt from the order.

Stocks of quinidine which with stocks of cinchonine and/or cinchonidine on hand June 19 totaled more than 10 ounces had to be reported to WPB on Form PD-401A by July 10.

Sales, transfers and deliveries of quinidine, except to ultimate consumers, may be made only upon receipt of a certificate manually signed by

the purchaser or the person accepting the transfer or delivery, or a duly authorized official in substantially the following form and specifying on the reverse side the quantity involved in the transaction:

"The undersigned hereby certifies that the quinidine (or product containing quinidine) ordered hereby is for use (1) as an anti-malarial agent, or (2) in the treatment of cardiac disorders, and will not be sold, transferred or delivered by the undersigned for any other purpose. This certification is made in accordance with the terms of Conservation Order No. M-131-a with which the undersigned is familiar."

Name.....
Date.....
By.....

QUININE alkaloid and its derivative salts may not be sold, transferred, delivered, purchased, accepted, processed or combined with other materials except for use as

(1) an anti-malarial agent,
(2) an ingredient of quinine and urea hydrochloride for hypodermic use.
(3) an ingredient of quinine and urethane.

Quinine which had been combined or compounded with other medicinal agents on or before April 4 is exempt from the order.

Stocks of more than 50 ounces in the form of solutions, pills, tablets or capsules (but not including quinine combined with other medicinal agents before April 30) physically located at any one place on April 4 must be reported to WPB on Form PD-401.

Sales, transfers and deliveries of quinine and its salts, except to ultimate consumers, may be made only upon receipt of a certificate manually signed by the purchaser or the person accepting the transfer or delivery, or a duly authorized official in substantially the following form and specifying on the reverse side the quantity involved in the transaction:

"I hereby certify that the quinine (or product containing quinine) ordered hereby is for use as (1) an anti-malarial agent (2) an ingredient of quinine and urea hydrochloride or hypodermic use, or (3) an ingredient of quinine and urthane, and will not be sold, transferred or delivered by me for any other purpose. This certification is made in accordance with the terms of General Preference Order No. M-131 with which I am familiar."

Name.....
By.....

SALICYLIC ACID is covered by an OPA price ceiling which prohibits sales by resellers, including wholesale druggists, in excess of the following prices, f. o. b. the reseller's shipping point: one pound cartons, 60 cents a pound. No additional charge may be made for containers. Pharmacists must keep available for inspection for one year their wholesaler's invoices showing the date of sale, name and address of buyer and seller, price paid, specifications, and quantity including kind and size of containers.

SAMPLES of products packed in tubes may be delivered without requiring a used tube turn-in if the samples were manufactured prior to June 15, 1942, and if such samples are distributed indiscriminately.

SANITARY NAPKINS, including all absorbent dressings sold for use by women during the menstrual period, the wadding of which is composed of wood cellulose in any proportion, are under OPA Price Regulation No. 140 which freezes the retail price of a package of 12 to 22 cents. Prices are frozen per sanitary napkin in different quantities as follows

Count per Package	Maximum Retail Price per Napkin
1 to 7, inclusive	$ .02125
8 to 12, inclusive	.01900
12	.01834
13 to 72, inclusive	.01670
73 and above	.01500

SHAVING PREPARATIONS in tin tubes may not be sold to an ultimate purchaser unless such purchaser delivers to the retailer concurrently with his purchase one used tube of any kind for each tubed product delivered to such purchaser.

TIN TUBES containing unrestricted percentages of tin may be used only for preparations compounded extemporaneously for dispensing by pharmacists on legally constituted prescriptions of physicians, dentists or veterinarians; for ointments and other preparations for ophthalmic use; for solutions for hypodermic injections; for sulfonamide ointments; for blood plasma; for diagnostic extracts (allergens); and for pile pipes. Pharmacists who buy empty tin tubes for prescription use must furnish a certificate in the following form:

Certificate required by Paragraph (e), sub-paragraph (1) of Conservation Order M-115. One copy of this certificate is to be delivered to each tube manufacturer from whom the tube user purchases tubes and is to cover all purchases present and future, so long as such Conservation Order, in its present form or as it may be amended from time to time, remains in effect.

....
(Tube User's Address) (Date)

In accordance with paragraph (e), sub-paragraph (1) of Conservation Order M-115 of the War Production Board designed to conserve the amount of tin used in collapsible tubes, the undersigned hereby certifies—and this shall constitute a certification to the War Production Board—

that the undersigned is familiar with the terms of said Conservation Order, and any and all amendments thereto, and that the undersigned will not use any tubes purchased from

.....
(Name of Tube Manufacturer)

.....
(Address of Tube Manufacturer)

in violation of the terms of said Order and amendments.

.....
(Legal Name of Tube User)

By.....
(Authorized Official)

.....
(Title of Official Reporting)

Tubes containing not more than $7\frac{1}{2}$ per cent of tin by weight may be used only for medicinal and pharmaceutical ointments not included above, for preparations intended for introduction into body orifices not included above, for dental cleaning preparations, and for shaving preparations, but only if the person using tubes for such purposes used such tubes prior to January 1, 1941. Pharmacists purchasing shaving preparations or dental cleansing preparations in tubes must furnish a certificate in the following form:

Certificate required by paragraph (e), sub-paragraph (2) of Conservation Order M-115. One copy of this certificate is to be delivered to each distributor from whom the retailer purchases tubes and is to cover all purchases present and future, so long as such Conservation Order, in its present form or as it may be amended from time to time, remains in effect.

....
(Retailer's Address) (Date)

In accordance with paragraph (e), sub-paragraph (2) of Conservation Order M-115 of the War Production Board designed to conserve the amount of tin used in collapsible tubes, the undersigned hereby certifies—and this shall constitute a certification to the War Production Board—that the undersigned is familiar with the terms of said Conservation Order, and any and all amendments thereto, and that the undersigned will not use any tubes purchased from

.....
(Name of Tube Manufacturer or Distributor)

.....
(Address of Tube Manufacturer or Distributor)

in violation of the terms of said order and amendments

.....
(Legal Name of Retailer)

By.....
(Authorized Official)

.....
(Title of Official Reporting)

TOOTH PASTE in tin tubes may not be sold to an ultimate purchaser unless such purchaser delivers to the retailer concurrently with his purchase one used tube of any kind for each tubed product delivered to such purchaser.

TOTAQUINE may not be sold, transferred, delivered, purchased, accepted, processed or combined with other materials except for use as an anti-malarial agent. Totaquine which had been combined or compounded with other medicinal agents on or before April 30 is exempt from the order.

Sales, transfers and deliveries of totaquine, except to ultimate consumers, may be made only upon receipt of a certificate manually signed by the purchaser or the person accepting the transfer or delivery, or a duly authorized official in substantially the following form and specifying on the reverse side the quantity involved in the transaction.

"I hereby certify that the totaquine (or product containing totaquine) ordered hereby is for use as an anti-malarial agent and will not be sold, transferred or delivered by me for any other purpose. This certification is made in accordance with the terms of General Preference Order No. M-131 with which I am familiar."

Name.....
By.....

USED TIN TUBES must not be disposed of except as follows:

(1) To the Tin Salvage Institute, 411 Wilson Ave., Newark, N. J., as agent for Metals Reserve Company.
(2) To any wholesaler of products packed in tubes, who is a duly authorized representative of the Tin Salvage Institute as agent for the Metals Reserve Company.
(3) To any other person who is such a representative.

Such deliveries may be made by such retailers at any time and in any manner consented to by the person to whom delivery is to be made, and shall be made, upon demand of such person and at the expense of such person, in such manner and at such time as such person may request. In no case shall any consideration be paid or received for any used tubes so delivered, and no person shall deliver any used tube of any kind to any person except those designated above.

VITAMIN C see ASCORBIC ACID.

Extra copies of this Ready Reference Guide may be obtained at five cents each by addressing a request to the Journal of the AMERICAN PHARMACEUTICAL ASSOCIATION, 2215 Constitution Ave., Washington, D. C.

Druggists' Digest

OF NEW FORMULAS, RECENT PHARMACEUTICAL DEVELOPMENTS, AND OTHER PROFESSIONAL DATA

BRITISH FORMULARY ADOPTS BENZYL BENZOATE PRODUCT

Out of extensive studies of the use of benzyl benzoate in the treatment of scabies, and experiments with its incorporation in various solutions, suspensions, and emulsions, the Ministry of Health of Great Britain has accepted the following formula for inclusion in the National War Formulary.

Benzyl benzoate	25 Gm.
Lanette wax, SX	2 Gm.
Water, *q. s.*	100 cc.

Melt the Lanette wax, SX, on a water bath, add the benzyl benzoate, mix, pour into the previously warmed water, and stir thoroughly.

The application is applied with a brush.

Lanette Wax SX was formerly manufactured by E. I. Du Pont de Nemours & Co., but was discontinued. Du Pont advises that the following formula gives a preparation which produces an effect equivalent to Lanette Wax:

Cetyl alcohol flakes	9 parts
Duponol C (Du Pont)	1 part

BASES FOR OPHTHALMIC OINTMENTS OF SULFA DRUGS

N. C. Elvin, of Brooklyn, N. Y., suggests the following three bases for ophthalmic ointments containing sulfathiazole or sulfanilamide:

I

Sodium alginate	4
Boiling water	75
Emulsify and strain, stir until cool.	
Add:	
Lanum (anhydrous)	16
Petrolatum, white	78
Sodium chloride	1
(dissolved in 4 parts of water)	

II

Sodium lauryl sulfate	0.5
Cetyl alcohol	8.0
Ol. theobroma	6.0
Petrolatum (white)	20.0
Water	65.0

III

Liquid petrolatum	35.
Spermaceti	13.
Glycostearin*	10.
Water	38.

Heat first three ingredients to 140° F.; add to water heated to same temperature, and stir until cool.

Before the sulfathiazole or sulfanilamide is added to an ointment base the drug should be sifted and a paste made with an equal amount of boiling water.

—*Arch. Ophthalm., 27, 2, 373–374*

* Glyco Products

HEXESTROL, A NEW STILBESTROL

The Council on Pharmacy and Chemistry of the American Medical Association has adopted *Hexestrol* as the non-proprietary name for dihydrodiethylstilbestrol, a hydrogenated form of stilbestrol.

The Council reported that a pharmaceutical manufacturer had advised that it was beginning to manufacture this new drug for clinical investigation prior to its introduction.

From available information, Hexestrol appears to be somewhat less active therapeutically than stilbestrol or stilbestrol dipropionate but far less toxic. This is an important factor, for the nausea, vomiting and other toxic side actions of stilbestrol have been the chief disadvantages to the use of this drug.

SULFATHIAZOLE OINTMENT IN THE TREATMENT OF BURNS

Dr. J. G. Allen, F. M. Owens, Jr., B. H. Evans and L. R. Dragstedt, of the Department of Surgery, University of Chicago, report the use of a 20 per cent ointment of sulfathiazole in Aquaphor (Duke Laboratories) in two cases of burns which were so extensive that during the first week of treatment one pound of the ointment was applied daily to each patient. Despite the fact that this daily application of ointment represented 100 Gm. of sulfathiazole, urinalyses failed to disclose the excretion of more than 2.0 Gm. per 24 hours in one case and 1.5 Gm. per 24 hours in the other and the total sulfathiazole in the circulating blood failed to exceed 1.5 mg. per cent except in one case in which the drug was given by mouth in addition to the ointment. The ointment gave relief from pain in less than an hour and the cases healed most satisfactorily.

The authors state that sulfathiazole was used because of its wide range of effective bacteriostasis and because it is effective against the common pathogens. They state that the most desirable concentration of the drug for ointment use has not as yet been determined but the 20 per cent strength gives rise to no harmful effects.

The 20 per cent sulfathiazole ointment has been widely employed in the University of Chicago Clinics during the past ten months in the treatment of superficial ulcerating areas, abrasions, infected superficial wounds, and in the impregnation of gauze pads used in various surgical wounds. The results have been gratifying in the more than 150 cases in which the ointment has been used. The greatest benefit has been observed in cases of infection caused by staphylococcus, streptococcus or Bacillus coli. The least benefit has been in wounds infected with the common anaerobic organisms.

—*Arch. of Surg., 44,5 (May 1942), 819–828*

1940 CENSUS STUDY SHOWS

81,924 PHARMACISTS IN PRACTICE

FIRST DETAILED STUDY OF OCCUPATIONAL EMPLOYMENT THROWS NEW LIGHT ON OUR PERSONNEL PROBLEMS

DURING the week of March 23 to 30, 1940, there were 81,924 pharmacists in the active practice of the profession in the United States, according to the Bureau of Census which last month released the report of its first detailed study of occupational employment. The figure of 81,924 is in sharp contrast to the 107,322 total of pharmacists registered with state boards of pharmacy throughout the country and indicates that a number of pharmacists who are registered in more than one state are counted once for each license they hold, and that state lists contain the names of individuals who are engaged in other activities, who have retired. or are deceased.

Of the 81,924 practicing pharmacists in the country, 78,708, or 96 per cent, are men and 3216, or 4 per cent, are women.

Insurance companies have estimated that 2.6 per cent of the men and women engaged in the practice of pharmacy die or retire each year. Applied to the 81,924 figure this means that a replacement of 2126 individuals is needed to maintain 1940 levels of personnel in the field. There were 2387 pharmacists registered by examination in 1940, according to the National Association of Boards of Pharmacy. But only 1511 men and women were graduated by the colleges of pharmacy of the country that year; the remaining 876 individuals who were registered apparently being duplicate registrants, holdovers, or some nongraduates who were registered on the basis of practical experience alone.

A detailed breakdown of the Bureau of Census figures, together with figures supplied by the

boards and colleges of pharmacy for 1940, appears with this article.

Some important changes in the figures have, no doubt, occurred since 1940 and these changes will show what has happened to the personnel of the profession as the result of enlistment, selective service, the demands of war industries, and other developments. The state associations, the boards of pharmacy and the schools and colleges of pharmacy are now furnishing the data for 1942 to the AMERICAN PHARMACEUTICAL ASSOCIATION as this information is necessary in the effort to secure the continued deferment of necessary pharmacists, and of teachers and students of pharmacy.

PHARMACISTS PERSONNEL STATISTICS—1940

State	Stores, 1939 U. S. Census	Pharm. Regis. St. Bd.	Pharmacists U. S. Census Men	Pharmacists U. S. Census Women	Replacement 2.6%	Regis. 1940 by Exam.	Reciprocity In	Reciprocity Out	Graduates	Students Men	Students Women
Ala.	833	1300	852	33	23	29	4	16	42	147	4
Ariz.	194	400	313	10	9	3	17	1	..	..	..
Ark.	704	846	699	26	19	4	12	20	..	..	..
Calif.	3285	8800	6204	287	169	133	..	..	56	215	24
Colo.	658	1242	999	68	28	18	12	18	25	78	22
Conn.	896	1856	1264	45	34	58	5	3	30	150	12
Del.	121	188	123	5	4	8	3	1	..	...	..
D. C.	328	900	772	14	19	24	33	18	16	104	4
Fla.	1002	1575	1174	17	31	37	90	3	23	86	12
Ga.	1109	1800	1276	32	34	44	15	30	23	155	7
Idaho	211	315	296	11	8	31	7	9	25	166	14
Ill.	3695	7500	5285	185	142	152	41	30	59	194	26
Ind.	1521	3636	1883	71	51	156	16	22	99	396	44
Iowa	1327	2263	1459	72	40	21	7	25	29	210	19
Kansas	1076	1417	1141	59	31	31	14	22	16	82	8
Ky.	871	1217	1017	41	23	19	11	16	15	94	5
La.	892	1500	1048	84	29	19	24	7	18	75	30
Maine	395	536	400	9	11	2	4	4	..	...	..
Md.	730	1123	1167	28	31	33	16	12	35	141	19
Mass.	2142	3568	3259	111	88	158	8	12	62	366	36
Mich.	2410	4090	3273	125	88	108	2	2	58	472	55
Minn.	1134	1591	1461	89	40	59	11	10	47	165	29
Miss.	626	800	647	19	17	8	5	13	8	40	6
Mo.	2171	4369	2441	104	66	44	22	35	49	249	12
Mont.	285	759	352	23	10	8	3	7	11	49	14
Nebr.	817	2322	903	53	25	30	5	27	30	143	19
Nev.	53	112	90	1	2	45	4	5	..	...	..
N. H.	228	398	225	8	6	11	5	5	..	...	..
N. J.	1811	4145	2637	82	71	65	6	13	46	195	29
N. M.	172	321	222	12	6	27	9	8	..	...	...
N. Y.	6620	14,720	11,498	375	309	312	..	..	83	930	124
N. C.	915	1100	1199	20	32	31	9	4	23	124	26
N. D.	266	336	289	17	8	25	0	13	23	88	9
Ohio	2825	5694	3654	161	99	129	20	29	139	622	73
Okla.	1135	1800	1285	52	35	20	18	26	19	213	8
Ore.	568	986	855	74	24	21	11	3	25	130	38
Penn.	4450	6750	5515	307	151	162	10	73	154	777	113
R. I.	377	561	488	22	13	20	1	4	19	79	12
S. C.	538	688	755	8	20	29	0	6	4	13	1
S. D.	330	425	356	17	10	16	6	8	18	80	9
Tenn.	924	1809	1216	42	33	37	26	10	15	88	2
Texas	3319	5000	3552	133	96	62	45	14	45	289	24
Utah	194	450	249	8	7	4	4	1	..	....	..
Vt.	149	208	127	2	3	13	5	3	..	...	..
Va.	789	1160	1215	31	32	20	24	9	13	101	11
Wash.	860	2178	1283	124	37	68	20	6	77	275	74
W. Va.	477	760	540	16	14	14	3	7	8	59	6
Wis.	1340	1666	1605	74	44	19	11	9	24	105	20
Wyo.	133	142	145	9	4	0	5	10	..	...	..
Totals	57,903	107,322	78,708	3216	2126	2387	629	629	1511	7945	1000

AMERICAN PHARMACEUTICAL ASSOCIATION

OFFICIAL ROSTER FOR 1941–1942

(Committees will be corrected as appointments are made by the President, Chairman of the Council, Chairman of the House of Delegates and Chairman of the Sections.)

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Editors of the Journal: Scientific Edition, J. L. Powers, 2215 Constitution Ave., Washington, D. C.; *Practical Pharmacy Edition*, R. W. Rodman, 2215 Constitution Ave., Washington, D. C.

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